



## Forecast

Prepared for:

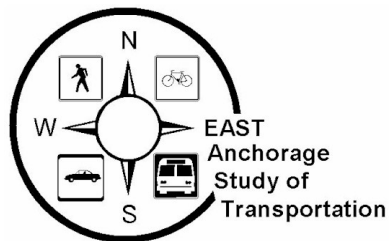
Alaska Department of Transportation & Public Facilities

and

Municipality of Anchorage

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*January 2003*

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### **Appendix A - Land Use Allocation Documentation Report**

### **Appendix B - Intersection Traffic Analysis Data Tables**

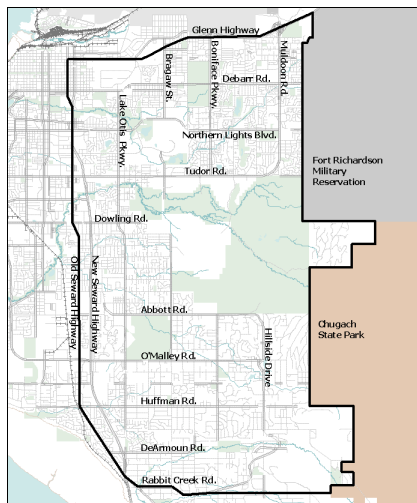
#### **List of Acronyms**

ADT	Average Daily Traffic
DOT&PF	Alaska Department of Transportation & Public Facilities
EAST	East Anchorage Study of Transportation
FDOT	Florida Department of Transportation
HDR	HDR Alaska, Inc.
ICU	Intersection Capacity Utilization
LOS	Level of Service
LRTP	Long Range Transportation Plan
MOA	Municipality of Anchorage

## Introduction

### The objective of the East Anchorage Study of Transportation . . .

*Develop long-range solutions to maintain and enhance future travel mobility within and through East Anchorage.*



East Anchorage Study Area

### The focus of the Forecast Report

*Forecast and analyze future traffic conditions in East Anchorage.*

## Study Overview

State and local officials commissioned the East Anchorage Study of Transportation (EAST) to examine transportation improvements for the East Anchorage study area.<sup>1</sup> The study's objective was to identify current problems; forecast future transportation demands and deficiencies (through the year 2023); and then analyze approaches to improve our ability to travel safely and efficiently within and through the study area. The study focused on accessibility, mobility, and public safety, as well as relieving congestion at major eastside intersections. The end product will provide data and analysis to help plan future public transportation, sidewalk, trail, and road improvements. Findings from EAST will be used, in part, to prepare Anchorage's long-range transportation plan (LRTP).

Work completed under EAST will occur in the following analytical phases:

- Transportation and Mobility Data Gathering and Analysis
- Problem Identification and Study Objectives
- Alternative Development and Evaluation
- Study Recommendations

## Focus of the Forecast Report

Understanding future development patterns and their effect on demand, supply, and performance of the transportation system is critical. The recently adopted comprehensive plan (Anchorage 2020) serves as a starting point for looking at future development patterns within and surrounding the study area. The Municipality of Anchorage's (MOA) newly completed Anchorage Transportation Model has been used to develop future travel demand and traffic forecasts. An evaluation of the forecast model results is presented in this report to illustrate the future transportation conditions anticipated within the study area.

The key objectives of this report include:

- Develop a picture of future transportation and land use conditions in East Anchorage.
- Use the Anchorage 2020 Comprehensive Plan as a basis upon which to build the future scenario.
- Integrate background data and analysis into the future scenario forecasts.
- Share forecasts and analysis results with the public and decision-makers.

<sup>1</sup> Defined as the geographic area bounded by the Glenn Highway to the north, Rabbit Creek Road to the south, the Old Seward Highway to the west, and the Ft. Richardson Military Reservation and Chugach State Park to the east.

### **Transportation Model**

*The key tool used to predict how East Anchorage's transportation system will perform in the future is a regional traffic model. A transportation model is a computer program designed to simulate travel behavior and characteristics by comparing the demand for transportation (the need to travel) to the supply (the available transportation network). The MOA's Anchorage Transportation Model:*

- *Allocates future development and land use to specific locations and areas based on regional estimates.*
- *Estimates the number and types of trips being made to and from each area, based on land use and development.*
- *Predicts origins and destinations of trips based on local information about likely distances people will travel.*
- *Divides trips into different modes (auto driver, bus rider, etc).*
- *Assigns trips to specific routes from origin to destination.*

- **Introduction.** The introduction section contains an overview of the study and the forecast report.
- **Forecast Methodology.** This section presents an overview of the forecast and analysis methodology.
- **Future Traffic Conditions.** This section of the report contains information on the forecast of average daily traffic levels anticipated in Anchorage in the year 2023.
- **Segment Level of Service Analysis.** This section of the report provides an analysis of the future traffic conditions to determine where travel demand and traffic levels strain transportation system capacity.
- **Intersection Level of Service Analysis.** This section of the report contains a level of service analysis of select intersections in the East Anchorage study area.
- **Appendix A: Land Use Allocation Documentation Report.** Appendix A outlines adjustments and growth assumption input into the MOA's Transportation Model based on Anchorage's new comprehensive plan.
- **Appendix B: Intersection Traffic Analysis.** Appendix B contains data sheets from the Intersection Capacity Utilization (ICU) Analysis of selected Anchorage intersections.

## Forecasting Methodology

### **MOA Anchorage Transportation Model Assumptions**

- Anchorage 2020
  - Land use assumptions (Town Centers, Transit Supportive Development Corridors, Etc.)
  - Implementation of the most recent approved Transit Development Plan (People Mover Route Restructuring)
- Existing Road Network and Approved Road Projects
  - C Street (Dimond to O'Malley)
  - Dowling (Lake Otis to Old Seward Highway)
- Trip Generation Table
  - Most recent 2023 trip table from AMATS including the new Hillside development projections (providing trip origins and destinations)
- Future Population: 348,751
- Future Households: 129,209

The key tool used to predict how east Anchorage's transportation system will perform in the future is a regional traffic model. A traffic model is a computer program designed to simulate travel behavior and characteristics by comparing the demand for transportation (the need to travel) to the supply (the available transportation network). The demand for transportation is based on an area's unique development features. Socio-economic data (i.e., the number and types of jobs or households in the area) and land-use information (i.e., the quantity, type and location of land use development) is input into the model. The model interprets this information to simulate travel in the area, including the number of trips made and the routes taken.

The traffic model to be used for this study is the MOA's TransCAD Transportation Model. The MOA updated the traffic model to reflect changes in land use in the future, transit service levels, and pedestrian system improvements called for in the Anchorage 2020 Comprehensive Plan (see p. 4). Future population and employment forecasts and land use assumptions based on the comprehensive plan were also input into the model. The model was also updated to reflect People Mover route restructuring and increased transit frequencies (see p. 5). Once the updated information was incorporated, future traffic volumes on arterial and collector roadways were projected.

The future traffic conditions were analyzed to determine the anticipated level of service given the available roadway network. The roadway network assumed for the analysis was the "committed" roadway network. The committed roadway network included roadways that are already built or improvements for which environmental clearance has been approved. Traffic volumes were analyzed based on the evaluation methodologies and criteria established for the project and described in the report titled "Evaluation Criteria" (DOT&PF & MOA, November 2002). Intersection analysis was performed using a planning level analysis methodology based on Intersection Capacity Utilization that is part of the Synchro traffic simulation software, and tailored to Anchorage intersections.

Among the key elements of the analysis are:

- An analysis of the forecast conditions.
- A combination of methods to analyze future conditions.
- Identification of anticipated future transportation problems and needs.
- Sharing the results of future conditions analyses with the public and decision-makers.

## Future Land Use and Pedestrian Conditions

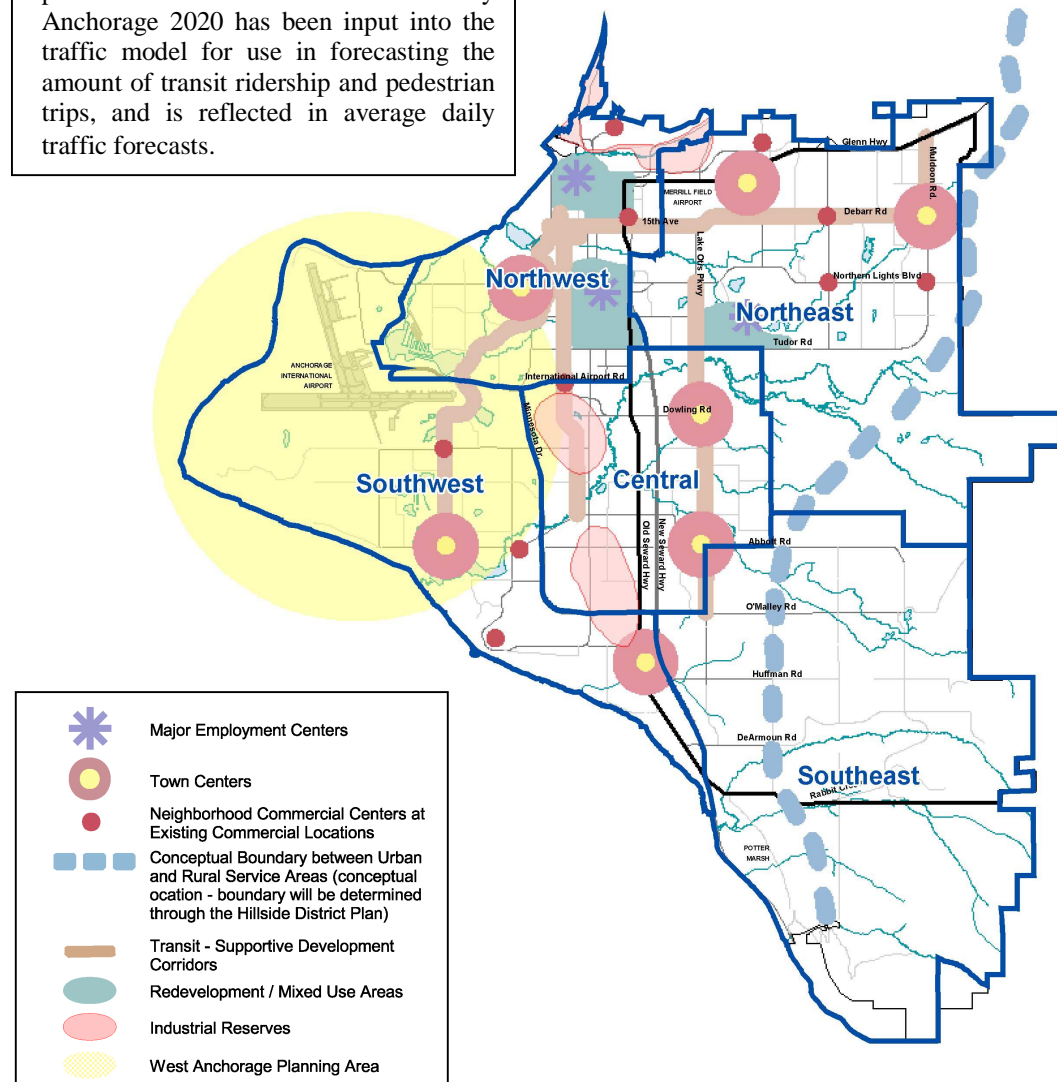
In many ways, Anchorage 2020 has created a dynamic, leading edge, policy framework for guiding growth and development within the Anchorage Bowl. The document's Land Use Policy Map "sets the direction for the preferred form of long-term growth and development in the Anchorage Bowl" (MOA February 2001, p. 50). This map identifies locations in Anchorage where major new urban elements would be located—providing policy guidance on the distribution and density of housing and employment land uses. Assumptions for each policy areas have been translated into the traffic model to help predict our future travel patterns.

The plan's vision, which is reflected in the traffic model, is mix of retail, public, and residential areas supported by transit and a high-quality pedestrian environment. Development of town centers and transit development corridors will promote mixed-use, higher-density development, public transit, and improved pedestrian connections. Appendix A provides an overview of the policy and growth guidance from Anchorage 2020 and how those assumptions have been translated into the model.

The traffic model predicts that over 50,000 pedestrian trips will be made per day in 2023. Analysis of the forecast suggests that, with implementation of the Comprehensive Plan policies, overall growth in vehicle miles traveled will drop by about 2% as compared to continuing our existing land-use trends. Such a drop is attributable to the changed land use, transit, and pedestrian environment put forth by Anchorage 2020.

## Anchorage 2020 Policy Map

The land use, housing, employment, and pedestrian environment envisioned by Anchorage 2020 has been input into the traffic model for use in forecasting the amount of transit ridership and pedestrian trips, and is reflected in average daily traffic forecasts.



## Future Transit Conditions

The MOA's Transportation Model forecast is based on both the Anchorage 2020 Comprehensive Plan transit assumptions and the People Mover Route Restructuring Plan routes (right). As such, the assumptions built into the model include the proposed transit development corridors, town centers, and increased transit frequencies.

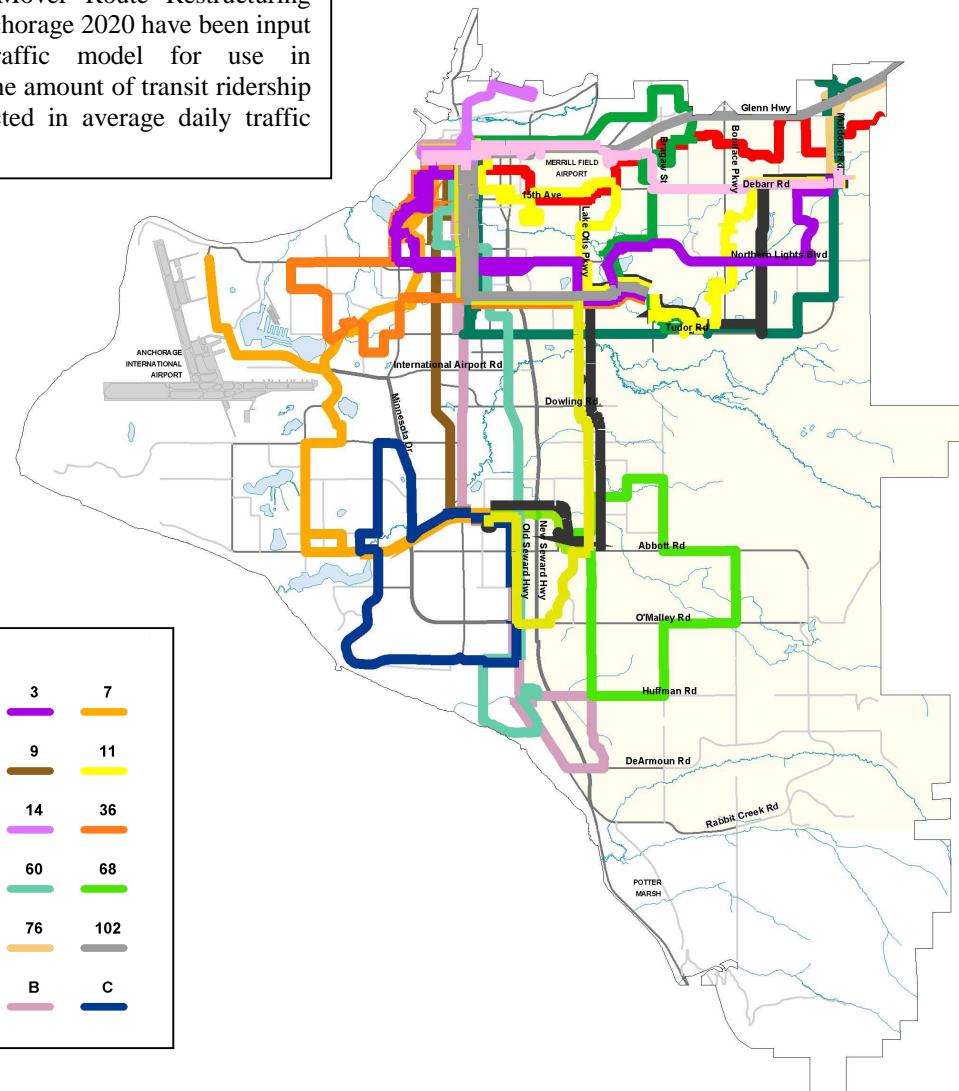
By the year 2004, People Mover has established a goal that the new bus system will carry on average approximately 13,900 weekday passengers within the Anchorage Bowl. The 1999 statistics show that the system was carrying 10,728 average weekday riders. This goal represents a 23% increase in ridership over the five-year period or 5% growth annually.

In comparison, the 2023 transportation model is predicting an average daily ridership of 21,000 passengers (an increase of 10,300 passengers over 1999 levels). This represents a 96% increase. As part of Long Range Transportation Plan, the Municipality has established as a goal, achieving a 200 percent increase in ridership. A target for the EAST alternatives analysis phase was to enhance transit ridership by an additional 10,000 riders.

## People Mover Route Restructuring Routes

The routes and service frequencies from the People Mover Route Restructuring Plan and Anchorage 2020 have been input into the traffic model for use in forecasting the amount of transit ridership and is reflected in average daily traffic forecasts.

Routes		
2	3	7
8	9	11
12	14	36
45	60	68
75	76	102
A	B	C





## Future Traffic Conditions

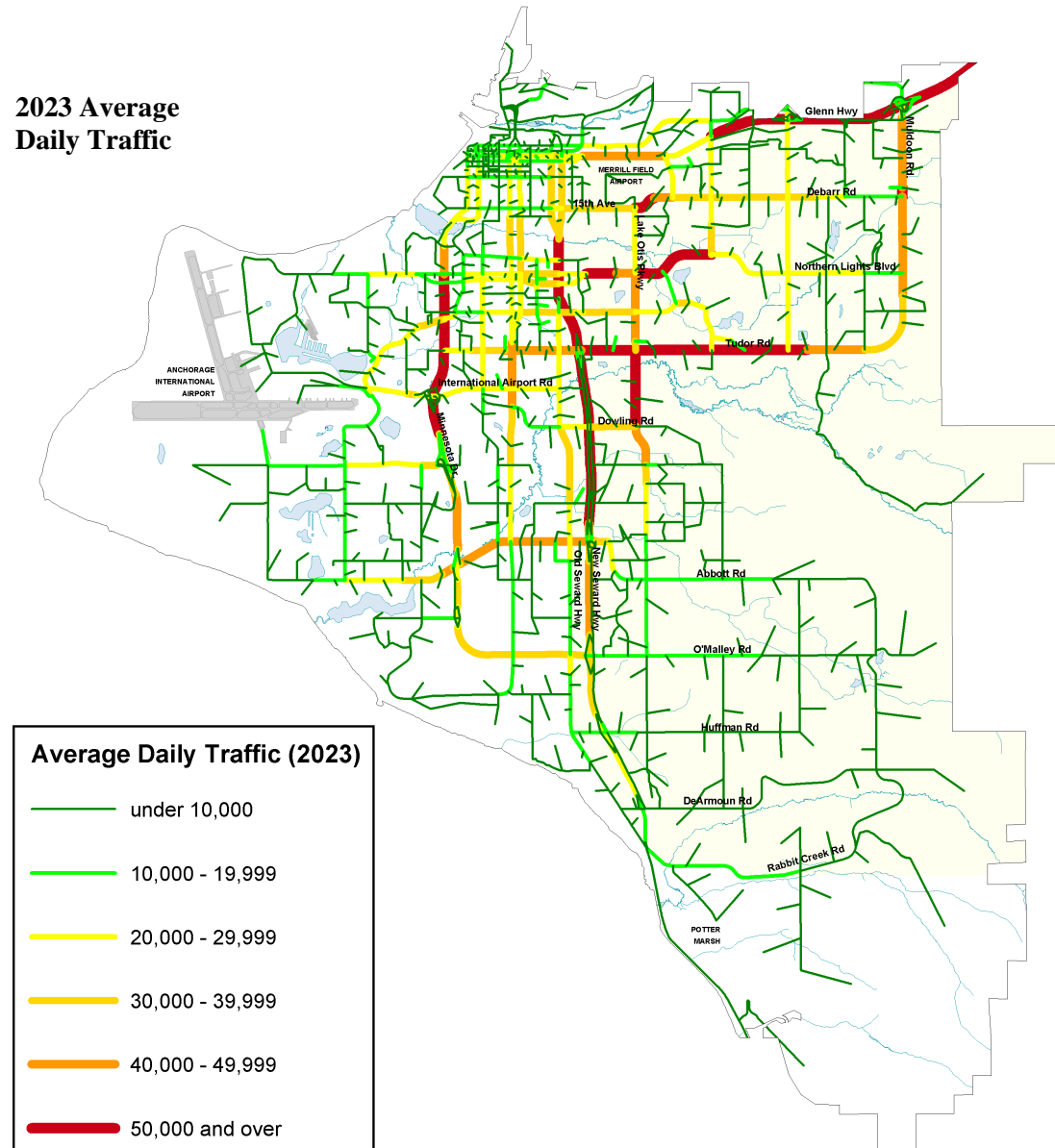
### 2023 Average Daily Traffic

The figure to the right depicts 2023 average daily traffic volumes generated by the MOA's Transportation Model and based upon land use and economic growth factors from the Anchorage 2020 Comprehensive Plan, and the committed roadway network.

Key east-west travel corridors include Tudor Road, East Northern Lights Boulevard, Debarr Road, and Glenn Highway. Significant north-south corridors within the study area include New Seward Highway, Lake Otis Parkway, and Muldoon Road; outside the study area, parts of Old Seward Highway and Minnesota Drive facilitate north-south travel

Heavy volumes of traffic use these roadways as commuters travel westbound to work in the mornings and eastbound returning home from work in the evenings. By 2023, Glenn Highway, Tudor Road, and New Seward Highway in the study area are all forecast to carry 50,000 or more vehicles per day. Traffic volumes along Muldoon Road are forecast to exceed 40,000 vehicles per day. The Glenn Highway, New Seward Highway, and Tudor Road are predicted to carry the greatest volumes of future traffic, with average daily traffic volumes between 70,000 and 80,000 vehicles per day.

### 2023 Average Daily Traffic



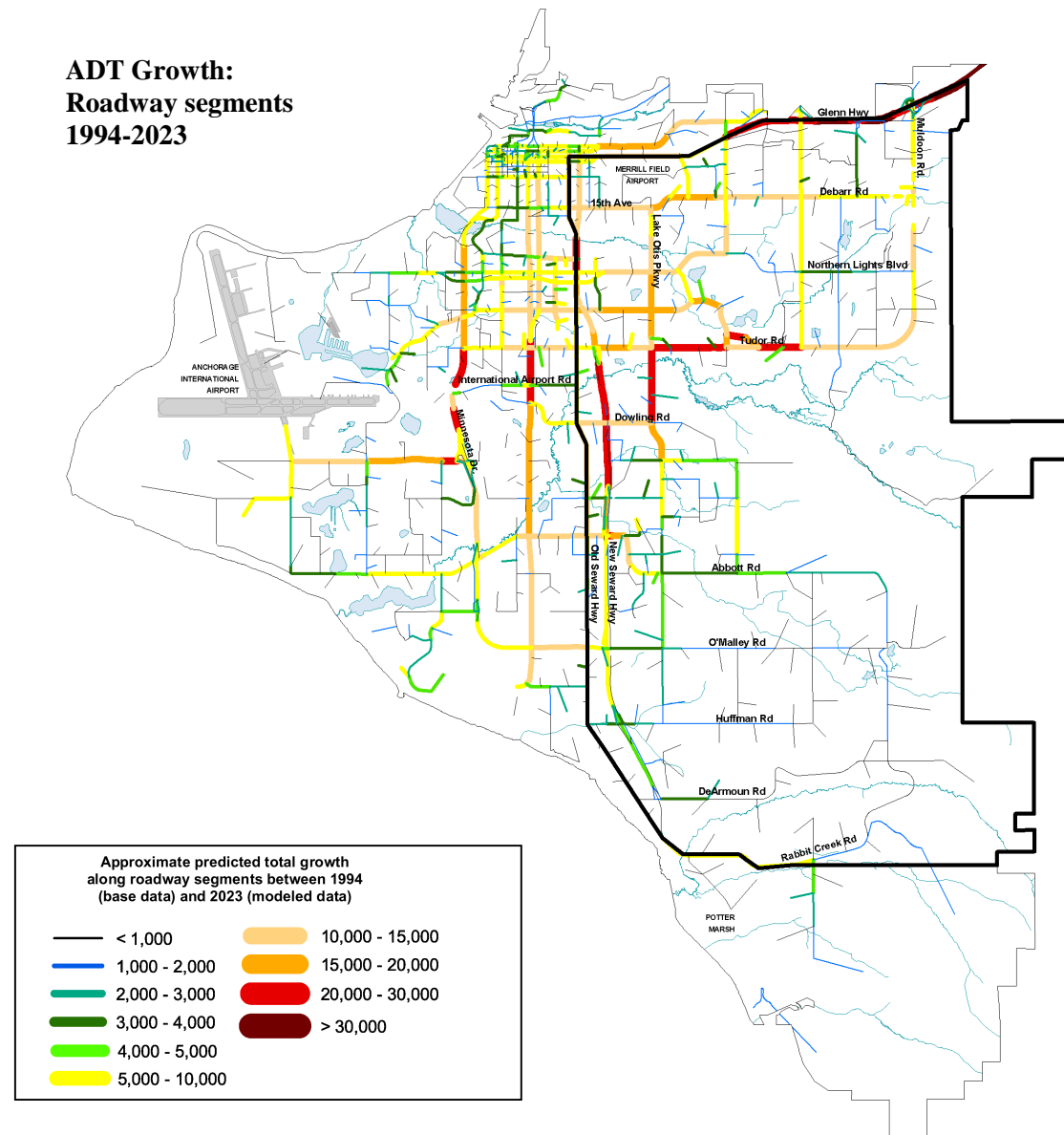


### Traffic Growth on Roadway Segments, 1994-2023

The figure to the right shows the total forecast growth in average daily traffic on roadway segments within the Anchorage Bowl. Roadways with the highest increase in daily traffic volumes are Tudor Road, E. Northern Lights Blvd., Debarr Road, and Glenn Highway. Traffic volumes along north/south roadways including New Seward Highway, Lake Otis Pkwy, and Muldoon Road, C Street, and Minnesota Drive are also forecast to grow by as much as 20,000 to 30,000 vehicles per day or more.

Growth in traffic volumes is sustained and reinforced by growth in land uses into the future, particularly continued residential growth to the north and east of Anchorage that is supported by the employment centers in the Anchorage Bowl. As alternatives to address future growth emerge through the study process, they will need to consider opportunities to maximize the efficiency of the existing transportation infrastructure, increase its person-carrying capacity and foster land use patterns that are sustainable in the long term and conducive to all modes of travel.

### ADT Growth: Roadway segments 1994-2023



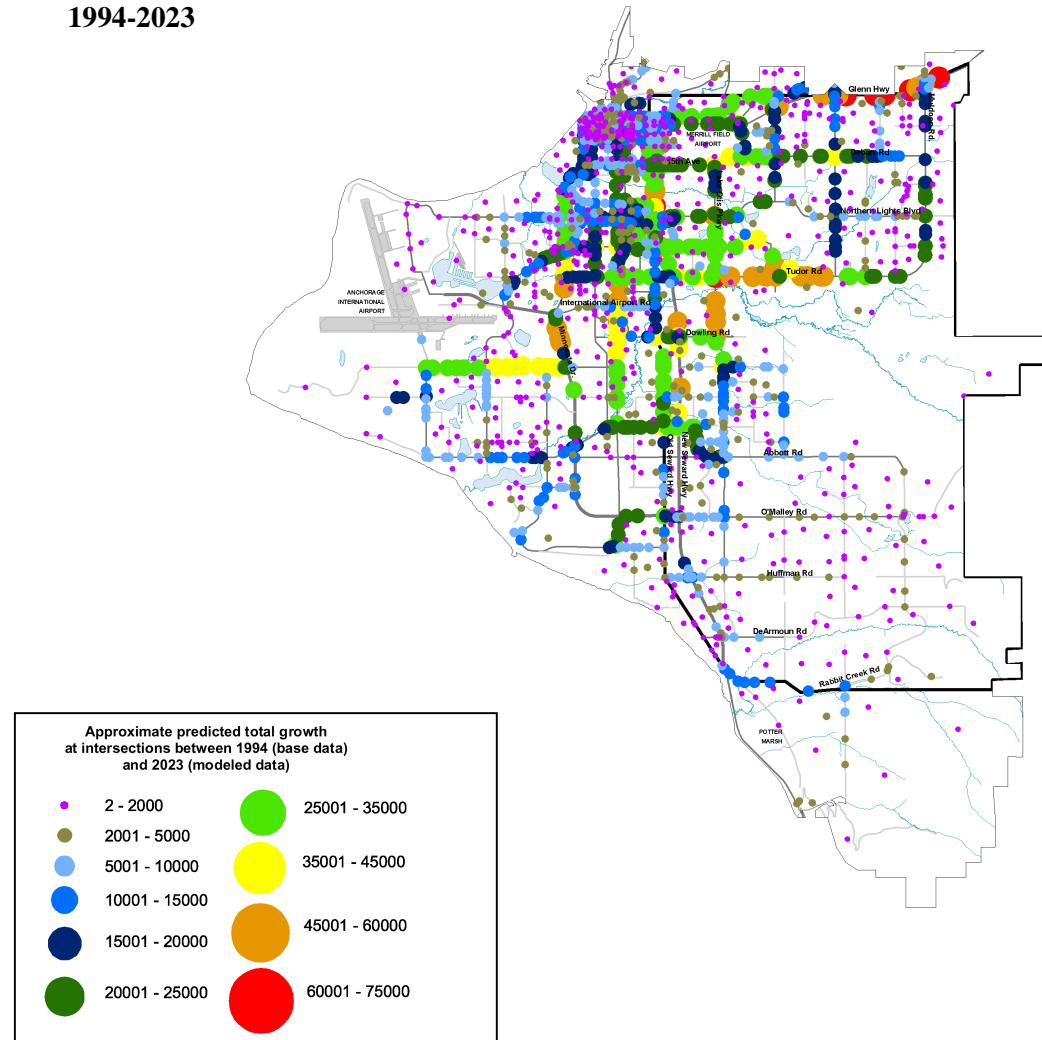
## Traffic Growth at Intersections, 1994-2023

The figure to the right shows the total forecast growth in average daily traffic at intersections between 1994 and 2023. Intersection growth was calculated by adding the increment of forecast traffic growth between 1994 and 2023 from the segments entering each intersection node. As such, this does not represent a true intersection volume, but provides a reasonable indication of where traffic growth is predicted to occur and the magnitude of that growth.

The magnitude of growth at intersections along Glenn Highway, Tudor Road, and Lake Otis Parkway will require significant increases in capacity to maintain acceptable operating conditions and alleviate congestion. Where major arteries intersect, such as at Lake Otis Parkway and Tudor Road, extraordinary solutions will be required to accommodate the significant growth through these intersections. Intersections identified to have the most significant increase in traffic growth, the highest levels of traffic, and that will present the greatest challenge to future mobility are:

- Lake Otis Pkwy and Tudor Rd.
- New Seward Hwy and Northern Lights Blvd.
- Glenn Hwy and Boniface Pkwy.
- Glenn Hwy and Muldoon Rd.

## Traffic Growth: Roadway Intersections 1994-2023



## Segment Level of Service Analysis

Level of service refers to a standard measurement used to reflect relative traffic flow conditions on a scale of A to F, with Level of Service (LOS) A representing free-flow conditions and LOS F representing severely congested conditions.

**Long Range Transportation Plan Goal:** Provide a roadway network that operates at a Level of Service (LOS) D or better for 95% of projected 2023 travel demand. (MOA, April 2001, p. 11)

**Level of Service - Defined.** Level of service (LOS) is a qualitative measure of the operational efficiency of intersections or roadway segments, based on quantitative analyses of traffic volume and capacity. The MOA has established LOS D as the acceptable operating threshold for roadways and intersections within its jurisdiction. Levels of service E or F indicate unacceptable conditions with operational problems or capacity deficiencies. Areas projected to operate at LOS D are areas of concern. If growth at these intersections is higher than predicted, problems could occur at these locations in the future.

### LOS Definitions

- A Free flow with low volumes of traffic and speeds controlled by the speed limits.
- B Stable flow, but drivers have reasonable freedom to select speed and lane of operation.
- C Stable flow, but most drivers are restricted in their freedom to select speed or change lanes.
- D Approaching unstable flow with little room to maneuver.
- E Volume at capacity, unstable flow with momentary disruptions and stops.
- F Forced flow, stops, low speeds.

Source: AASHTO, 2001 and ITE 1992

**Level of Service – Measurement.** Roadway level of service can be measured in terms of the volume of traffic a roadway is carrying compared to its theoretical capacity to accommodate that volume. The table to the right depicts the LOS thresholds measured in terms of average daily traffic for arterials that include intersections controlled by traffic signals; the table immediately below it depicts the LOS thresholds for uninterrupted highways and freeways. LOS thresholds presented in these tables are based on an average of several different LOS criteria developed by Florida's Department of Transportation (FDOT) and modified for Anchorage's conditions. The ADT values provide a planning level relationship between the number of lanes along a particular roadway and the general LOS that can be expected. It should be noted that the LOS thresholds for one-way streets would be approximately 40% higher than those listed in the tables.

### Signalized Arterial LOS Thresholds Measured in Average Daily Traffic

Lanes	Divided	Level of Service				
		A	B	C	D	E
2	Undivided	--	3,100	8,200	13,800	15,300
4	Undivided	4,300	11,000	18,700	24,000	27,500
4	Divided	4,800	18,500	25,700	35,100	41,500
6	Divided	7,300	25,600	32,900	48,000	49,500
8	Divided	9,400	33,300	42,800	62,600	64,300

Source: HDR

### Uninterrupted Highways and Freeways LOS Thresholds Measured in Average Daily Traffic

Lanes	Divided	Level of Service				
		A	B	C	D	E
2	Undivided	2,000	7,000	13,800	19,600	27,000
4	Divided	22,000	36,200	51,700	65,400	73,800
6	Divided	34,100	55,700	79,500	100,700	113,600
8	Divided	48,700	79,900	113,400	142,300	160,000
10	Divided	61,600	100,900	143,400	179,800	202,000
12	Divided	74,400	122,000	173,200	217,300	244,200

Source: HDR

## 2023 Segment Level of Service

The figure to the right shows the 2023 roadway segment level of service within the project area. The segment level of service analysis is based upon the traffic volume forecasts from the MOA's regional traffic model for the entire Anchorage Bowl (see p. 4) and the LOS tables on p. 7. The model included those roadway improvements that already have secured funding (C Street-Dimond Blvd to O'Malley Rd. and Dowling Road from Old Seward Highway to Lake Otis Pkwy).

Based upon the LOS threshold established by the MOA, any roadway segment operating at a LOS below D is deemed to be operating at an unacceptable level. As shown in this figure, without roadway improvements or other changes, ten east/west roadways and four north/south roadways are projected to have segments operating at unacceptable levels of service by the year 2023 including:

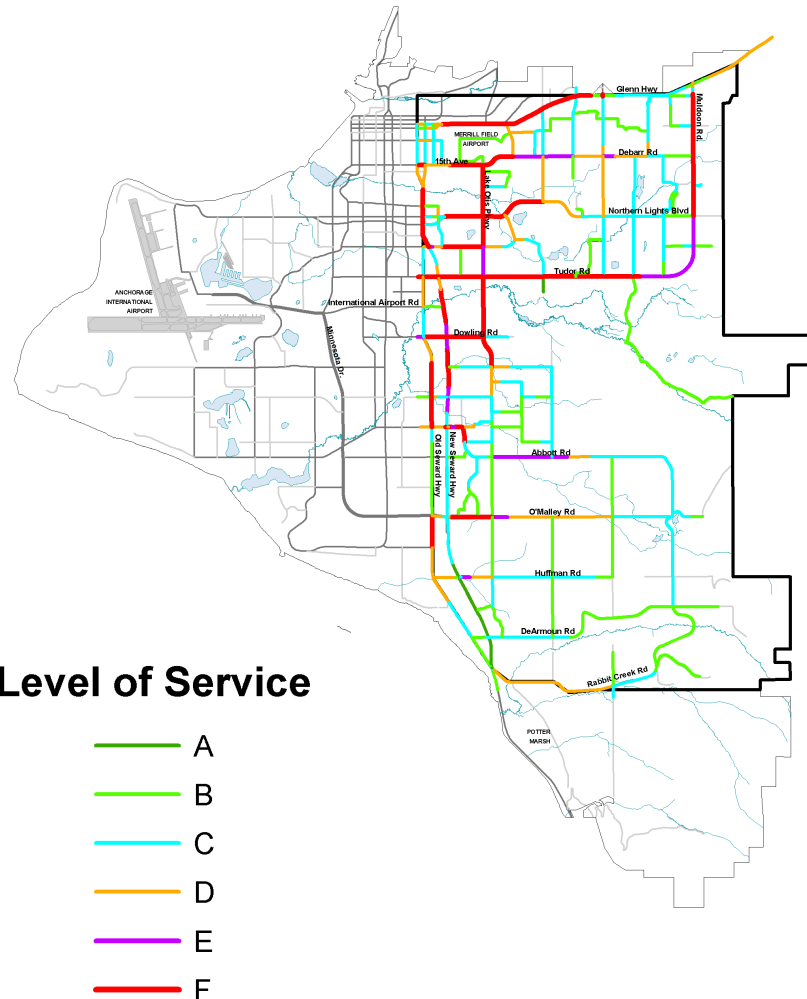
### *LOS F (Failing)*

- Glenn Highway
- Debar Road
- E. Northern Light Blvd
- E. 36th Ave.
- Tudor Road
- E. Dowling Road
- O'Malley Road
- Muldoon Road
- Lake Otis Parkway
- New Seward Highway
- Dimond Blvd.

### *LOS E (At Capacity)*

- Abbott Road
- Huffman Road

## 2023 Roadway Segment LOS: EAST Study Area



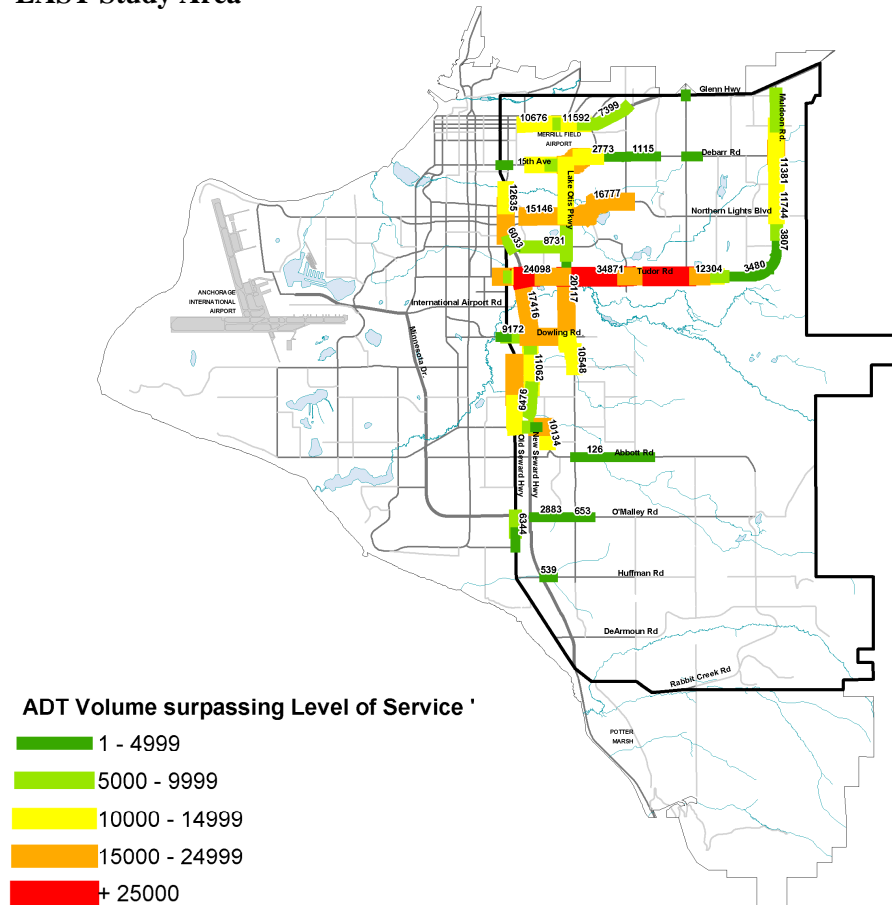
## 2023 ADT: Amount Over Capacity

As mentioned earlier, the MOA has established a minimum goal of achieving a roadway level of service of at least D. The figure to the right represents the increment of average daily traffic the roadway segment is forecast to carry in excess of level of service D within the study area. This figure shows not only the primary problem areas east of and including the New Seward Highway, but also the potential magnitude of the capacity deficiencies.

The highest deficiencies are anticipated along Tudor Road, which is forecast to carry more than 25,000 vehicles per day in excess of its level of service D capacity. Segments along New Seward Highway, Northern Lights Boulevard, and Lake Otis Parkway, are all predicted to have segments with volumes exceeding level of service D capacity by as much as 35,000 vehicles per day, while Muldoon Road, Glenn Highway, and Debarr Road are forecast to have segments with traffic volumes in excess of level of service D capacity by 5,000 to 15,000 vehicles per day.

Based upon future growth in the area and the forecast increments of traffic growth in excess of threshold capacity levels, significant enhancements to the transportation network and the person-carrying capacity of the East Anchorage transportation system will be necessary to maintain acceptable levels of service in 2023.

## 2023 Segment ADT Volume in Excess of LOS D: EAST Study Area



## Intersection Level of Service Analysis

### Long Range Transportation

**Plan Goal:** Improve non-project arterial intersection capacity by 15% for at least 5 intersections per year. (MOA, April 2001, p. 11)

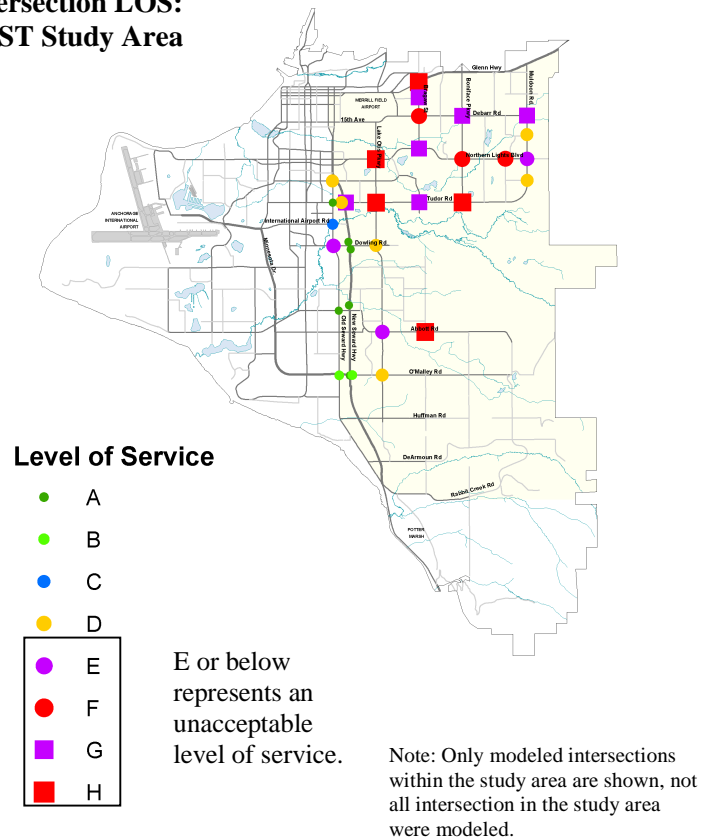
**Intersection Level of Service – Defined.** To evaluate how well roadway intersections are functioning, a methodology based on “Intersection Capacity Utilization” has been used. Intersection Capacity Utilization (ICU) is a planning level method for calculating intersection level of service by evaluating the critical traffic movement volumes compared to lane capacity at an intersection. The methodology is well suited for traffic planning purposes but does not provide the detail necessary for operations or signal timing design. The analysis will provide a reasonable indication of those intersections where congestion would be expected if no improvements occur.

ICU	LOS	LOS Definitions
0 to 0.60	A	The intersection has no congestion. A cycle length of 80 seconds or less will move traffic efficiently. All traffic should be served on the first cycle. Traffic fluctuations, accidents, and lane closures can be handled with minimal congestion. This intersection can accommodate up to 40% more traffic on all movements.
>0.60 to 0.70	B	The intersection has very little congestion. Almost all traffic will be served on the first cycle. A cycle length of 90 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures can be handled with minimal congestion. This intersection can accommodate up to 30% more traffic on all movements.
>0.70 to 0.80	C	The intersection has no major congestion. Most traffic should be served on the first cycle. A cycle length of 100 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures may cause some congestion. This intersection can accommodate up to 20% more traffic on all movements.
>0.80 to 0.90	D	The intersection normally has no congestion. The majority of traffic should be served on the first cycle. A cycle length of 110 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures can cause significant congestion. Sub-optimal signal timings cause congestion. This intersection can accommodate up to 10% more traffic on all movements.
>0.90 to 1.00	E	The intersection is right on the verge of congested conditions. Many vehicles are not served on the first cycle. A cycle length of 120 seconds is required to move all traffic. Minor traffic fluctuations, accidents, and lane closures can cause significant congestion. Sub-optimal signal timings can cause significant congestion. This intersection has less than 10% reserve capacity available.
>1.00 to 1.10	F	The intersection is over capacity and likely experiences congestion periods of 15 to 60 minutes per day. Residual queues at the end of green are common. A cycle length over 120 seconds is required to move all traffic. Minor traffic fluctuations, accidents, and lane closures can cause increased congestion. Sub-optimal signal timings can cause increased congestion.

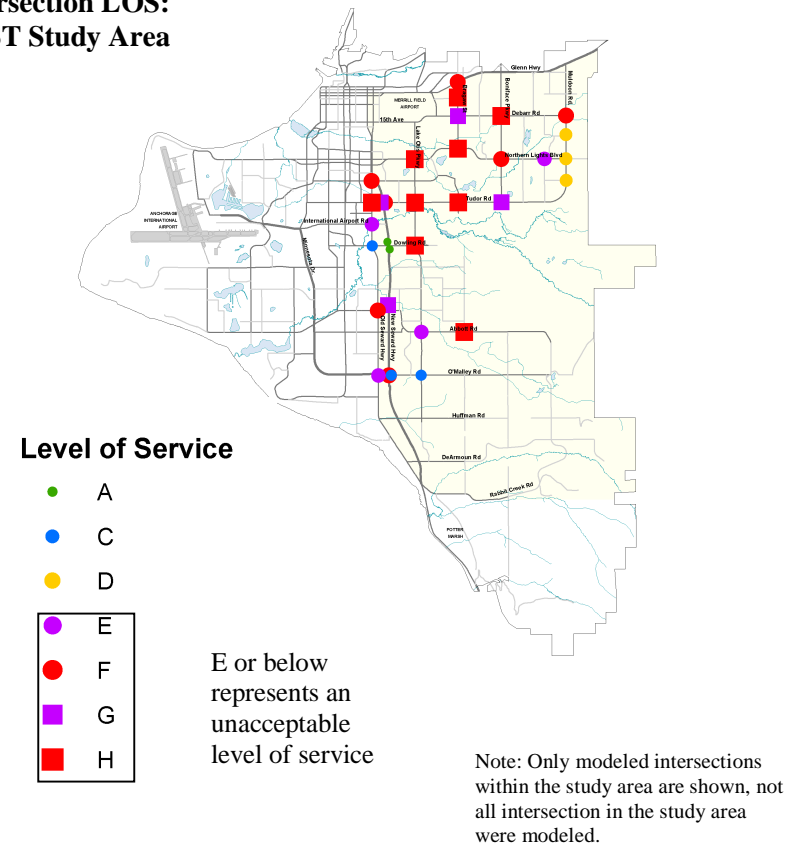
Source: Intersection Capacity Utilization 2000: A Procedure for Evaluating Signalized Intersections. Trafficware Corporation. 2000.

The maps below show the projected intersection level of service for select intersections within the study area projected to occur in 2023 (not all intersections have been modeled). Input data is based on projected traffic volumes forecast by the MOA's Transportation Model (see p. 4), existing intersection geometries, and the "committed roadway network" (i.e., those roadway projects that have been approved through an environmental process). Of the intersections modeled, the poorest performing intersections are predicted to be Lake Otis and Tudor, Lake Otis and Northern Lights, and Abbott Loop and Abbott Rd. Each of these intersections are predicted to be operating at LOS H in both the a.m. and p.m. A number of other intersections are at LOS H in either the a.m. or p.m. These intersections are 20% or more over capacity and could experience congestion periods of over 2 hours during the peak periods indicated by the maps. Long queues and significant delays will be common. It is likely that if additional high volume intersections were modeled, they would also be predicted to experience problems.

**2023 AM Peak  
Intersection LOS:  
EAST Study Area**



**2023 PM Peak  
Intersection LOS:  
EAST Study Area**





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## **APPENDIX A**

### **Land Use Allocation Documentation Report Anchorage 2020 Land Use Assumptions**

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## Appendix 1 – Redevelopable Land Inventory - Methodology

## **1.0 Introduction**

### ***1.1 Purpose of This Report***

The key tool used to predict how Anchorage's transportation system will perform in the future is the Anchorage Transportation Demand Model. The transportation demand model is a computer program designed to simulate travel by comparing the demand for transportation (the need to travel) to the supply (the available transportation network). The demand for transportation is primarily based on socio-economic measures such as the number and distribution of population and employment. Future transportation demand is therefore based on existing as well as future land use development. The model utilizes land use information to estimate the number and destination of future trips to simulate traffic volumes on area roadways. (The model also estimates the number of transit, carpool, walk, and bicycle trips using this information.)

Changes in the amount and distribution of population and employment can have a significant impact on future traffic projections. As a result, it is important to update the transportation demand model's land use assumptions whenever major land use changes can be reasonably anticipated. Moreover, Federal Highway Administration Metropolitan planning regulations require Metropolitan Planning Organizations (MPOs), such as Anchorage Metropolitan Area Transportation Solutions (AMATS), to utilize the latest planning assumptions in their transportation demand models. The recently adopted 2020 Anchorage Bowl Comprehensive Plan is expected to implement such a change in land use patterns.

Previously, the Anchorage Transportation Demand Model utilized what was called the existing trends scenario of future land use development. The assumptions contained in this scenario were essentially an extrapolation of existing development trends based on current zoning and existing densities. The 2020 Anchorage Bowl Comprehensive Plan, however, recommends changes to the existing trends toward a more compact, mixed-use development. As a result, many of the land use assumptions utilized in the existing trend scenario needed to be re-examined and revised to reflect the new policies and objectives of the 2020 Anchorage Bowl Comprehensive Plan. This report documents those changes and how they were incorporated in the Anchorage Transportation Demand Model.

### ***1.2 Document Overview***

This section provides an overview of this document.

**Chapter 2.0** presents information on the Municipality of Anchorage Land Use Allocation Model. The land use allocation model projects the density and distribution of future population, household, and employment by sector (retail, professional services, health, education, other services, and industrial). Output from the land use allocation model is used as the primary input for the transportation demand model. The land use allocation model uses a two-phase process to step down the regional growth projections

developed by the Institute of Social and Economic Research (ISER) to the Traffic Analysis Zone (TAZ) estimates usable by the transportation demand model.

**Chapter 3.0** presents information on the ISER regional population and employment projections. These projections are used as areawide control totals of future population and employment growth. These control totals are then distributed in a subsequent step throughout the Municipality of Anchorage using a land use allocation model developed specifically for the Municipality of Anchorage. It should be noted that the areawide (regional) control totals remain constant regardless of whether or not the existing trends or Anchorage 2020 assumptions are used.

**Chapter 4.0** discusses the Anchorage 2020 land use policies and objectives and how they were used by the Anchorage Land Use Allocation Model to revise the distribution of population and employment to the traffic analysis zones. This section also documents the assumptions associated with converting the general policy guidance of Anchorage 2020 into specific land use assumptions.

**Chapter 5.0** summarizes shifts in the land use patterns as a result of the implementation of Anchorage 2020.

**Chapter 6.0** includes a reference section.

## **2.0 Anchorage Land Use Allocation Model**

Socio-economic measures such as population and employment are the basis for estimating the demand for travel. There are well-defined relationships between land use development and travel demand generation. KJSA, with assistance from Municipality staff, developed a land use allocation model (using a Microsoft Excel spreadsheet platform) to project the density and distribution of future population, household, and employment by sector (retail, professional services, health, education, other services, and industrial). The following outlines the methodology and major factors used by the model to distribute population and employment to the traffic analysis zones (the primary building blocks of the transportation demand model).

### **2.1 Regional Growth**

The land use allocation model utilizes the 2001 ISER Population and Employment Projections as the basis of its regional projections of population and employment increases. This widely accepted econometric model is used by many governmental and private entities as a planning tool. The ISER projections are developed for the Anchorage Borough as well as the Mat-Su Valley. Low, base, and high cases are developed which reflect a range of economic assumptions. The base case is used in the Anchorage Land Use Allocation Model since, by definition, it is the most likely to occur. Section 3 summarizes the actual population and employment projections contained in the ISER report and compares it to the assumptions used in Anchorage 2020.

### **2.2 Traffic Analysis Zone Growth**

The regional household and employment totals are used to control the allocation to individual parcels in the spreadsheet models. Once growth is allocated to individual parcels it is aggregated to the TAZ level in order to incorporate it into the trip generation sub model of the transportation planning model. The allocation of growth to individual parcels is based on five broad categories of data:

- The availability of the parcel for development or redevelopment
- The suitability of the land for development
- The type and amount of development allowed under zoning ordinances
- The accessibility of the location of the parcel
- Growth in the pipeline

#### **2.2.1 Availability**

A parcel may be “available” for growth if it is vacant or if it is underutilized. (Note: The vacant land use inventory has recently been updated through use of the Municipality of Anchorage building permit database to reflect development activities through June 2002.) Under-utilized parcels generally consist of large lots with a single-family house on it. Although not technically vacant, they are included in the developable land supply since they are likely to be resubdivided into smaller lots sometime in the future.

In the past, land use projections used in the Anchorage Transportation Model relied primarily on vacant land inventories. This methodology is perfectly acceptable when there is an abundant supply of vacant land available for development. However, as Anchorage 2020 points out “vacant land can only meet part of the forecast housing demand”. According to Anchorage 2020, the balance will be met through redevelopment. Moreover, Anchorage 2020 adopted strategies designed to promote the creation of more intensely developed town centers, major employment centers, redevelopment areas, and transit supportive development corridors in already developed areas. It is assumed that some redevelopment will be required in order to fulfill these objectives.

Refinements to the land use allocation model were recently completed in the summer of 2002, which added redevelopable parcels to the vacant land inventory. The refinement involved the addition of redevelopable parcels to the land use availability database, which previously only included vacant and under-utilized land. (Note: Redevelopable parcels are distinguished from the underutilized parcels by their smaller size.) The incorporation of redevelopable land represents an important enhancement to the land use allocation model. Appendix A outlines the methodology used to identify redevelopable parcels.

### ***2.2.2 Suitability for Development***

Available land varies in its suitability for development due to environmental constraints as follows.

- Wetlands
- Slope
- Alpine
- Avalanche
- Floodplain/Floodway
- Seismic

These categories were used to develop an overall suitability index for each parcel, where each parcel was identified as unsuitable for development, marginally suitable, or suitable. For example, parcels containing Class A wetlands were identified as unsuitable for development and were not included in the supply of available vacant land. Parcels containing Class B wetlands were not taken out of the supply of available land, but their development potential was reduced compared to parcels deemed suitable for development.

### ***2.2.3 Zoning***

Zoning district designations, by law, control how much and what type of development can occur on each parcel in terms of dwelling units per acre for residential use and type of development and density for commercial use. The Anchorage Land Use Allocation Model uses the Municipal Title 21 zoning code as the basis for determining future land use and densities. Two steps were used to apply the zoning assumptions to the land use availability dataset. First, existing development densities were calculated for each



zoning district by traffic analysis zone. Second, existing densities were adjusted where needed by Municipality of Anchorage planning staff based on professional judgment.

The existing trends scenario relied exclusively on this zoning based methodology. The new Anchorage 2020 scenario applies this methodology to areas outside of the Land Use Policy Elements (i.e., major employment centers, town centers, redevelopment areas, and transit supportive corridors, but utilizes a different set of assumptions (based on Anchorage 2020 objectives) to replace the existing zoning density assumptions.

### **2.3 Accessibility**

Accessibility factors represent the tendency for new development to occur near existing activities and where the transportation system is (or will be) adequate. These factors are calculated as functions of existing population and employment, and measures of travel time. A zone-to-zone travel time matrix and the Gamma function parameters from the HBW trip distribution model are used to derive a friction factor matrix.

To allocate household growth, the friction factors are multiplied by the HBW attractions of the destination zone and totaled by the origin zone to represent the origin zone's aggregate accessibility to employment. Similarly, the accessibility factor for employment growth is calculated from the sum of the productions and attractions multiplied by the f-factor values, and summed by the destination zone. Finally, the resulting accessibility measures are divided by the maximum accessibility to yield accessibility factors that range from zero to one. The accessibility factor calculations are as follows:

$$\text{PopAcc} = \sum_{\text{OrigTAZ}} [\text{HBW Prop} * \text{HBW Attr}] / \text{Max}(\text{PopAcc})$$

$$\text{EmpAcc} = \sum_{\text{DestTAZ}} [\text{HBW Prop} * (\text{TotalProd} + \text{TotalAttr})] / \text{Max}(\text{EmpAcc})$$

where:

PopAcc = accessibility factor for allocating population and household growth

EmpAcc = accessibility factor for allocating employment growth

HBW Prop = TAZ-to-TAZ home-based work friction factors, or propensities, from the distribution model

HBW Attr = home-based-work attractions at the destination TAZ

Total Prod, Total Attr = Total productions and attractions at the destination TAZ

### **2.4 Pipeline Development**

The model explicitly incorporates development that is known or reasonably believed to occur. This includes:

- Growth that has already occurred since 1994 (base year model conditions)
- Development that is already permitted
- Major subdivision plats with known buildout schedules such as Southport
- Draft Muldoon Town Center Plan

- Master plans from major generators such as universities and hospitals.

These developments are incorporated explicitly or as changes in assumed densities for specific parcels.

### **3.0 Population, Housing, and Employment Forecast**

The Anchorage Land Use Allocation Model begins with a projection of future population, employment, and housing growth. How much Anchorage is expected to grow will have a direct bearing on where and how we travel in the community. This section presents the forecast of future population, employment, and housing upon which the traffic model is based.

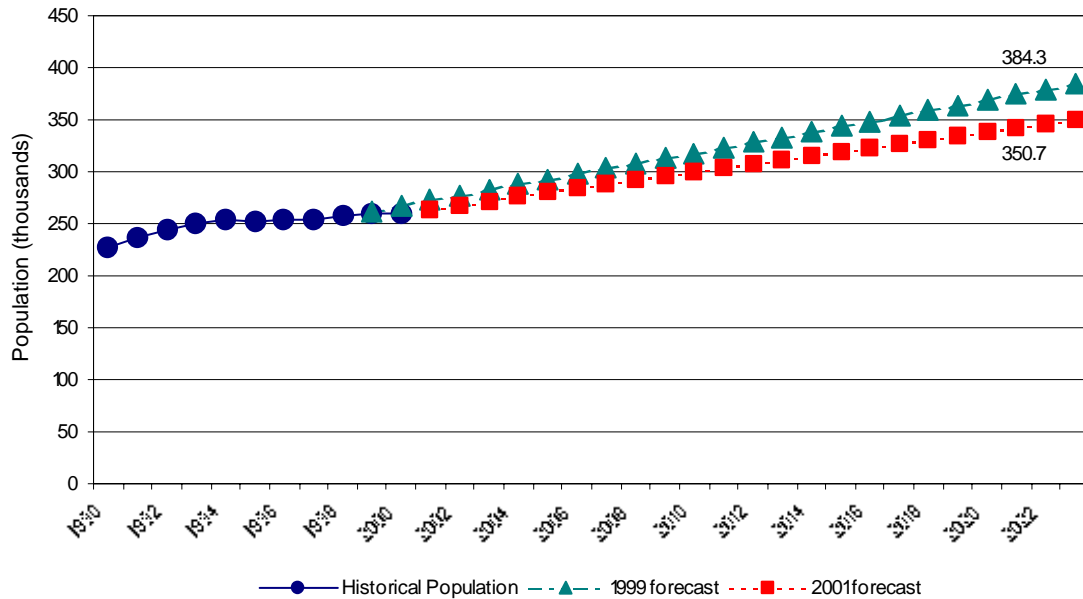
In 2001, the Anchorage Assembly approved Anchorage 2020—the comprehensive plan for the Anchorage Bowl. The comprehensive plan “provides a framework for decisions about land use and transportation, as well as public facilities, economic development, housing, and other public issues that are vital to a healthy and livable community” (Municipality of Anchorage February 2001, p. 3). Anchorage 2020 was based on forecasts performed by University of Alaska Anchorage Institute of Social and Economic Research (ISER) in 1999. ISER has recently, and significantly, changed its economic forecasts for Southcentral Alaska. As a result, the MOA decided that the traffic model should be updated to reflect the more recent 2001 ISER forecast. This section will outline what changes from the comprehensive plan assumptions have been made to reflect the differences between ISER’s 1999 and more recent 2001 estimate of employment, population, and housing in the Anchorage area, as well as current information available from the Alaska Department of Labor (DOL).

#### **3.1 Population**

According to the Department of Community and Economic Development, the Census 2000 population in the Municipality of Anchorage was 260,283 people. Anchorage 2020 forecasts that in the base case, the population of the MOA would be 365,700 people in the year 2020. ISER’s recent forecast, however, projects that the population will be 332,300 in that same year—about 9% less than previously forecast (see Table 1). The Alaska Department of Labor’s estimates also indicate that population growth has slowed—it increased by a marginal 0.3% from 1999 to 2000 but had increased by 0.8% from 1998 to 1999 (DOL 1998 and 1999). Based on this information and the apparent recent slow-down of population growth in Anchorage (see Figure 1), the Anchorage 2020 forecast of population growth appears high and has been revised downward for the purposes of traffic forecasting to reflect recent trends.

**Figure 1**

**Historical and Forecasted Population of the Municipality of Anchorage, 1990-2023**



Source: Alaska Department of Labor and Workforce Development Research and Analysis Section, 2002 and ISER 1999 and 2001.

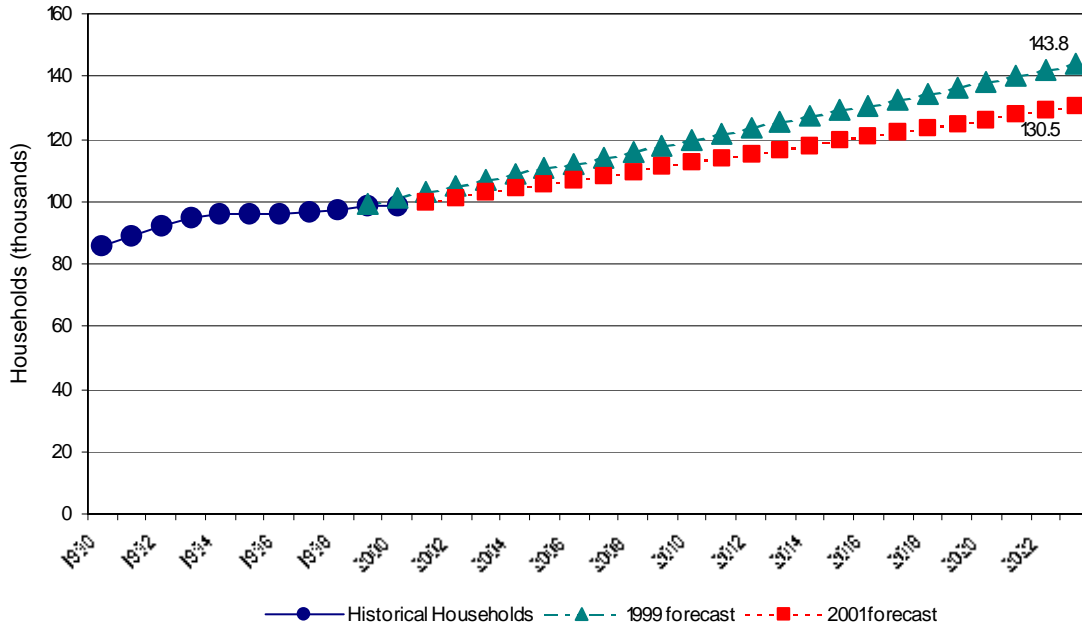
### 3.2 Households

Anchorage 2020 forecasts that in the base case, there would be 136,500 households (111,900 in the Anchorage Bowl) in the MOA in the year 2020. ISER's recent forecast, however, projects that the number will only be 122,300—about 10% less than its 1999 forecast (see Table 1, Section 3.4). In addition, U.S. Census data indicates the number of people per household has been increasing—there were 2.60 people per household in 1990 and 2.67 per household in 2000. This could be due to Anchorage evolving into a more “permanent,” less transient community, meaning more families are settling down. If such a trend continues, the number of households may grow at a rate slightly slower than the rate of population growth. Figure 2 illustrates the calculated number of historical households and ISER's forecast number of households from 1999 and 2001.

Based on this information and the apparent recent slow-down of population growth in Anchorage (see Figure 1), the Anchorage 2020 numbers for household growth appear high. For the purpose of traffic modeling, the MOA has revised the household estimate downward to reflect recent trends (Figure 2).

**Figure 2**

**Calculated Historical and Forecasted Number of Households, 1990-2023**



Source: Alaska Department of Labor and Workforce Development Research and Analysis Section, 2002 and UAA Institute of Social and Economic Research, 1999 and 2001.

Note: The 1990-2000 households were calculated by dividing the population by the average number of people per household from the 1990 and 2000 census (2.64).

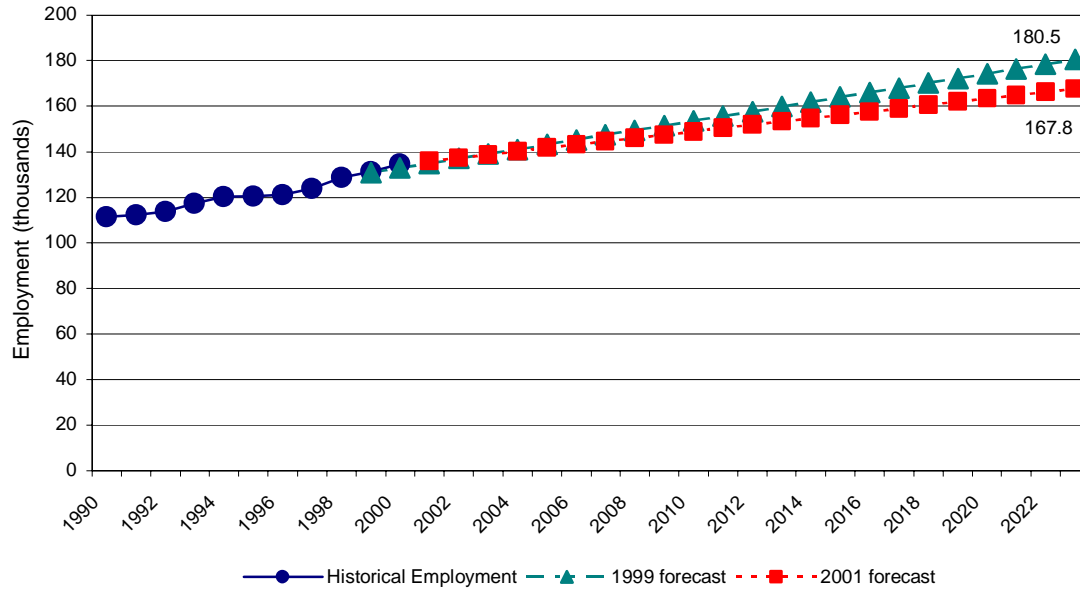
### 3.3 Employment

Anchorage 2020 forecasts that in the base case, there will be an employment level of 172,900 jobs (158,600 in the Anchorage Bowl) in the MOA in the year 2020. ISER's more recent forecast, however, projects that the number will only be 160,300 jobs—roughly 7% less than its 1999 estimate (see Table 1). Anchorage 2020 was based on ISER's 1999 forecast, which estimated that the MOA would add 41,400 jobs by 2020. ISER's 2001 forecast, however, estimated the MOA would add only 28,800 jobs—a 30% reduction in the number of jobs to be added. For historic comparison, the Alaska Department of Labor reported a gain of 20,900 jobs in Anchorage between 1990 and 2000. The overall economy is different from what it was a year ago—the job growth rate has slowed recently. Employment growth will be slow and steady in the near future and will be dependent, in part, upon the growth of tourism (and, therefore, the trade and services sectors).

Based on this information and the apparent recent slow-down of employment growth (see Figure 3), the Anchorage 2020 numbers for employment growth appear high. The MOA has decided to use the slightly revised downward employment projection in its traffic model to reflect more recent trends.

**Figure 3**

**Historical and Forecast Employment in the Municipality of Anchorage, 1990-2023**



Source: Alaska Department of Labor and Workforce Development Research and Analysis Section, 2002 and UAA Institute of Social and Economic Research, 1999 and 2001.

### 3.4 Population/Employment Forecast Summary

Table 1 compares ISER's 1999 and 2001 (most recent) base case employment/population/households forecasts for Anchorage by the year 2020. The difference in the two forecasts reflects economic and demographic conditions that have caused ISER to reduce its forecasts from the numbers originally use in Anchorage 2020 from 1999.

**Table 1**  
**Summary of Differences in Demographic Forecasts**

	2000 Actual	1999 ISER Forecast— 2020	2001 ISER Forecast— 2020	Actual Change in Forecasts <sup>1</sup>	Percent Change in Forecasts <sup>1</sup>
Population	260,000	365,700	332,300	-33,400	-9.1%
Households	94,800	136,500	122,300	-14,200	-10.4%
Wage and Salary Employment	131,500	172,900	160,300	-12,600	-7.3%

Source: ISER 2001, MOA February 2001

Note: <sup>1</sup> Calculated by HDR Alaska based on the data sources listed.

## 4.0 Anchorage 2020 Policies and Objectives

### 4.1 Overview

Allocating regional forecasts, such as ISER's, requires the use of numerous assumptions regarding the distribution of population and employment. Anchorage 2020 provides the official policy framework for guiding growth and development within the Anchorage Bowl. The document's Land Use Policy Map (Figure 4) "sets the direction for the preferred form of long-term growth and development in the Anchorage Bowl" (MOA February 2001, p. 50). The map identifies locations in Anchorage where major new urban elements would be located, providing policy guidance on the distribution and density of housing and employment. Where that growth will occur will influence how we travel, which, in turn, will affect traffic conditions, transit ridership, and biking and walking trips. The following identifies the primary policy elements contained in Anchorage 2020 that are expected to substantially affect the distribution and density of future growth in the Anchorage Bowl:

- *Employment Centers* are focal points for the highest concentrations of employment (primarily office employment). The distribution of employment centers will affect travel patterns because employment should become more concentrated in certain areas of the community.
- *Town Centers* are the focus of community activity for smaller subareas of Anchorage and should include a mix of retail, public facilities, and residential areas supported by transit and a high quality pedestrian environment. These policy areas affect travel patterns by providing medium to high residential densities in proximity to services and transit. Such development patterns should have a positive effect on transit ridership and encourage more walking and biking trips than our current development patterns.
- *Transit-Supportive Development Corridors* tie major elements of the Land Use Policy map together and link town centers to employment centers—these policy areas have a distinct effect on travel patterns because they are linking residential areas with employment at densities that support transit ridership.
- *Redevelopment/Mixed Use Areas* are areas that have been identified near all major employment centers. The goal is to have medium to high residential densities in these areas so that people live closer to where they work (p. 51).

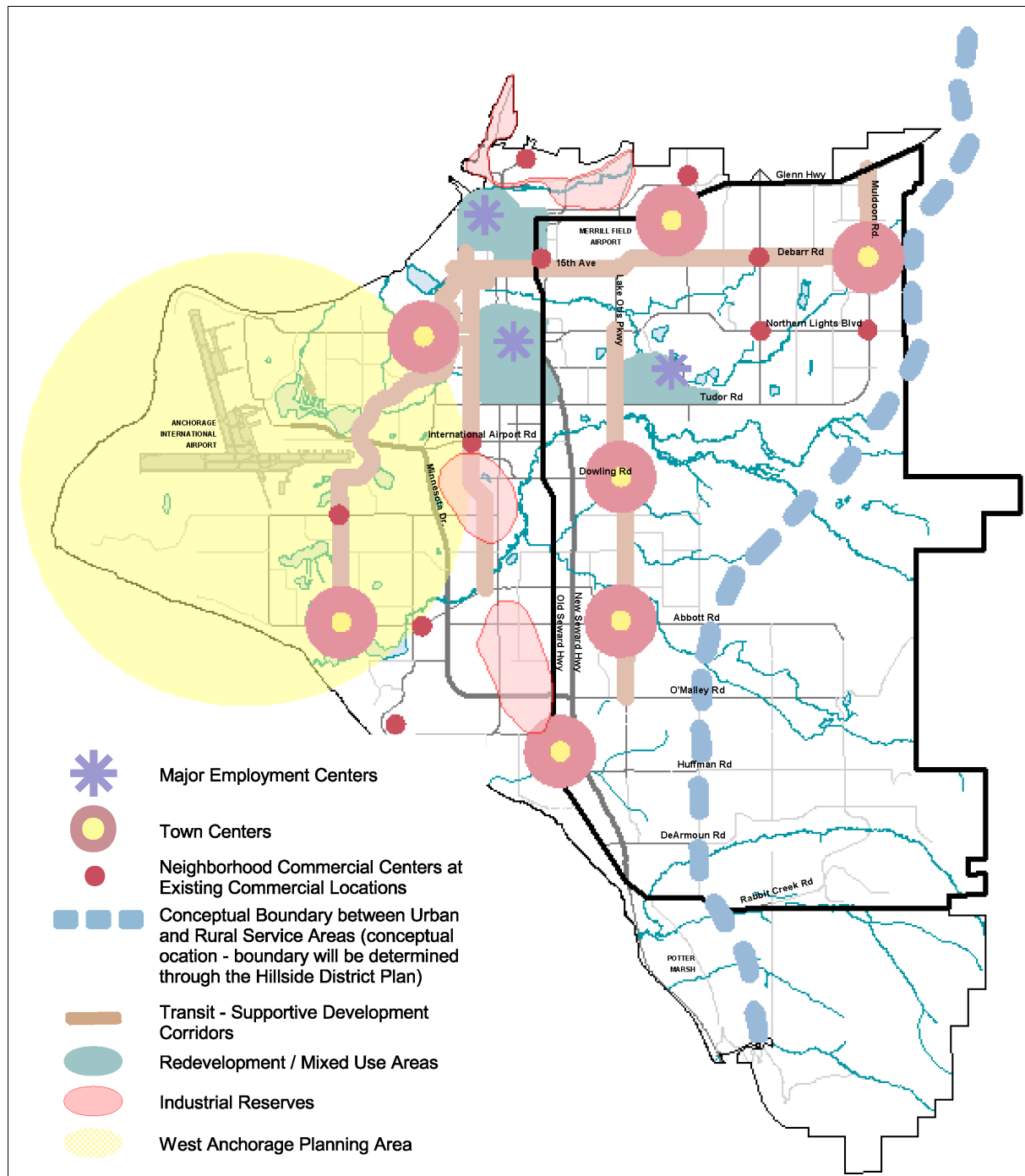
Each of these new urban elements has implications for land use, residential and employment densities, and, in turn, will affect traffic patterns and travel behavior. These policies are intended to work together to encourage a community that is more connected and that supports a wider range of travel choices.

Anchorage 2020 was intended to be a blueprint to guide development in the Anchorage Bowl over the next 20 years. Although it includes some specific land use policies and action strategies, the Plan is general in nature. A lot of work remains to be done in order to implement Anchorage 2020, e.g., ordinances need to be revised, zoning designations

changed, and sub-area plans adopted. The following chapter documents how the general policies and strategies contained in Anchorage 2020 were converted into a land use database that could be used for transportation modeling purposes. It should be noted, however, that there are several implementation plans which have either been proposed by private developers or have been initiated by the Municipality of Anchorage which provide useful details about how Anchorage 2020 might ultimately be implemented (at least with respect to Town Centers). The Muldoon Town Center Plan was unveiled by Koonce, Pfeffer, Bettis shortly after the adoption of Anchorage 2020. This plan may provide the most realistic look at the market for Town Center type of development. The Community Planning Department of the Municipality of Anchorage recently completed draft reports for two Town Centers (Abbott Road and Northway Mall). While these plans have yet to be adopted, they provide the best guidance for making assumptions about how these town centers will develop. They may also provide useful prototypes for making assumptions about how other town centers might develop. As new implementing plans are adopted that provide more detail as to how Employment Centers, Town Centers, Transit Supportive Development Corridors, and Redevelopment Areas are to be developed, the assumptions contained in this report will be revised.



**Figure 4**  
**Anchorage 2020 Land Use Policy Map**



The following sections present an overview of the policy guidance from Anchorage 2020 and document the assumptions and interpretations applied to the Anchorage Transportation Demand Model.

## **4.2 Employment Centers**

Trips to and from employment account for a substantial percentage of the trips made by Anchorage drivers during peak times. These trips are also characterized by morning and evening travel peaks, which contribute a large part of the congestion documented on Anchorage's road network. For these reasons, the distribution of future employment has major implications for travel demand. This section presents background information and assumptions used by the MOA for modeling the effect that Anchorage 2020 employment center policy areas will have on the distribution and density of future employment.

Anchorage 2020 identifies three specific areas of the Anchorage Bowl intended to provide for the highest concentration of employment (greater than 50 employees per acre). As identified in Figure 4, the major employment centers are located in Downtown, Midtown, and the University-Medical District. These areas are intended to have appropriate infrastructure to support a mix of high-intensity land uses that will support a more balanced transportation system. Medium to high density residential developments are intended to surround these core employment centers, with higher density mixed-use development that includes residential uses. These areas should also have an emphasis on connectivity among the land uses to include and facilitate pedestrian and transit facilities, along with traditional auto access (p. 51).

The most specific guidance from the plan can be found in Policy 23, which states:

Major employment centers, shown on the Land Use Policy Map, exist at the Downtown, Midtown, and University/Medical areas. Characteristics of these centers are as follows:

- a) Concentrations of medium-to high-density office development with employment densities of more than 50 employees per acre;
- b) Promotion of compact, mixed use commercial/office development where businesses are close enough to walk between;
- c) New building oriented to the street, with parking located in parking structures or to the side or behind buildings;
- d) Creation or enhancement of public focal points such as plazas or parks, including public art; residential development as an ancillary use; and,
- e) A pedestrian-oriented environment including expanded sidewalks, crosswalks, street furniture, bus shelters, and landscaping (MOA February 2001, p. 75).

#### 4.2.1 Composition of Employment Growth

The challenge for forecasting land use in the major employment centers is to determine how much office growth could be expected to locate in these areas and at what densities they will develop (given the assumptions of Anchorage 2020). These forecasts will inevitably be constrained by the amount and composition of future employment growth. There is also the question as to whether or not there will be enough office employment growth in the future to support the higher employment densities called for in Anchorage 2020. This section attempts to address this issue.

Table 2 shows the results of the 1996 “Anchorage Bowl Commercial and Industrial Land Use Study” undertaken by HDR on behalf of the Municipality of Anchorage. Based on this information, it appears that office employment is the only type of employment that is able to support densities greater than 50 employees per acre. (The overall Anchorage employment density is currently estimated to be about 20 employees per acre.) As a result, it appears that the future amount of office employment will, to a large degree, determine Anchorage’s ability to successfully achieve the densities called for in the comprehensive plan. The question remains, How much office employment growth should the Municipality of Anchorage expect in the next 20 years? To answer this question, data on job distribution by category was gathered and analyzed.

**Table 2**  
**Employees per Acre, by Land Use Type, Anchorage Bowl, 1994**

<i>Land Use</i>	<i>Employees</i>	<i>Acres</i>	<i>Employees Per Acre</i>
Retail	21,269	1,180	18
Services	19,898	684	29
Office	33,930	580	58.5
Industrial	14,624	2,272	6.4
Transportation	6,488	4,206	1.5
Other <sup>1</sup>	22,891	—	—
<b>Total</b>	<b>119,100</b>	—	—

Note: <sup>1</sup>Other mainly includes public sector employment.

Source: MOA 1996

As Table 3 shows, Anchorage’s job gains between 1990 and 2000 were skewed toward service, retail, and transportation/communications/utilities employment (typically non-office employment). Government and mining employment (mainly energy industries like BP and ARCO, which are largely office-type employment) lagged during that time period.

**Table 3**  
**Anchorage Wage & Salary Employment, 1990 & 2000**

<i>Industry</i>	<i>1990</i>	<i>2000</i>	<i>Change</i>
Mining	5,355	3,016	-2,339
Construction	5,678	6,959	1,282
Manufacturing	2,308	2,234	-74
Transportation/Utilities/Communication	11,026	15,225	4,199
Wholesale	5,605	6,078	473
Retail	20,077	25,170	5,093
Finance/Insurance/Real Estate	5,682	6,789	1,107
Services	27,554	36,949	9,395
Agriculture/Forestry/Fishing	415	776	361
Non-Classified	105	50	-55
Government	26,179	27,655	1,476
<b>Total</b>	<b>109,983</b>	<b>130,901</b>	<b>20,918</b>

Source: Alaska Department of Labor May 2002.

The Alaska Department of Labor forecast (see Table 4) seems to reinforce the trend of the past 10 years. The short-term statewide forecast anticipates that services, retail, and transportation/communications/utilities will be the main growth sectors, finance/insurance/real estate (an office-type employment sector), and manufacturing will grow slightly, and government and mining (largely office employment) will continue their decline.

**Table 4**  
**Statewide Employment Growth by Industry, 1998-2008**

<i>Industry</i>	
Mining	-1,190
Construction	2,250
Manufacturing	420
Transportation/Utilities/Communication	8,300
Wholesale	1,450
Retail	8,600
Finance/Insurance/Real Estate	750
Services	25,750
Agriculture/Forestry/Fishing	240
Government	-550
Total	46,100

Source: Alaska Department of Labor May 2002.

Unfortunately, there is no official State of Alaska or other employment forecast by industry extending out 20 years, which is the planning horizon used by the Anchorage Transportation Demand Model. When projecting employment composition 20 years in the future, it may be worth keeping in mind the cyclical nature of the Anchorage office market. At the onset of the mid-1980s real estate recession, Anchorage had a very large surplus of commercial office space, due to the office construction boom of the late 1970s and early 1980s. Anchorage's four largest office buildings -- ARCO, Atwood, and Frontier (1983) and BP (1985) -- together added nearly 1.5 million square feet of office space. These buildings were built to house mainly energy industry and governmental office workers. Then, in the next 15 years, Anchorage's office-based employment stagnated, with the exception of professional and medical offices whose location preferences often did not well suit available commercial space. As a result, there was virtually no speculative commercial office building for 15 years.

Recently, there has been a spate of new office construction. Although office development is expected to continue, today's employment outlook and conservative economic outlook make it unlikely that Anchorage will see high-rise office development on a scale similar to the earlier era. Nevertheless, given the fact that government (a major user of office space) currently represents 23% of total employment in Anchorage, it seems unrealistic to assume that no additional government employment will occur over the next 20 years.

Therefore, for the purposes of this study, future employment growth by industry was estimated by averaging the percent share of future job growth of each industry group with the existing percentage share of each industry group. This tends to smooth out the growth rate of the fastest growing sectors such as services and bumps up the growth rate of the flat sectors, such as government. The results of this methodology are shown in Table 5.

**Table 5**  
**Employment Share by Industry**  
**2002-2023**

<i>Industry Group</i>	<i>Percent Share</i>
Retail	17.5%
Services	48.0%
Mining	1.5%
Construction	3.25%
Manufacturing	1.0%
TCU	10.0%
Wholesale	2.6%
FIRE	3.2%
Government	12.35%
AFF	0.3%

In terms of location, much of the recent office development appears to be gravitating towards the Midtown area due, in part, to the availability of vacant and redevelopable land. The recent completion of the 212,000 square foot ASC building on the former Plaza 36 Mobile Home site (west of C Street and north of 40th Avenue is a recent example of new office development in the Midtown area.

#### **4.2.2 Existing Employment Densities**

By analyzing existing employment densities, it is possible to determine how close the Municipality of Anchorage is to achieving the employment densities objectives contained in Anchorage 2020. Figures 5 and 6 show the 1998 employment densities for the two of the three major employment centers of the Anchorage Bowl. The University-Medical District (including the UAA, Providence Hospital, and APU) is not included in the density maps since a substantial number of the trips are generated by students attending UAA, which is not specifically addressed in Anchorage 2020.

As these maps indicate, downtown Anchorage is the only area of town that is currently achieving the Anchorage 2020 employment density objectives. In fact, most of Downtown west of C Street and north of 9th Avenue greatly exceeds the 50 employees per acre threshold.

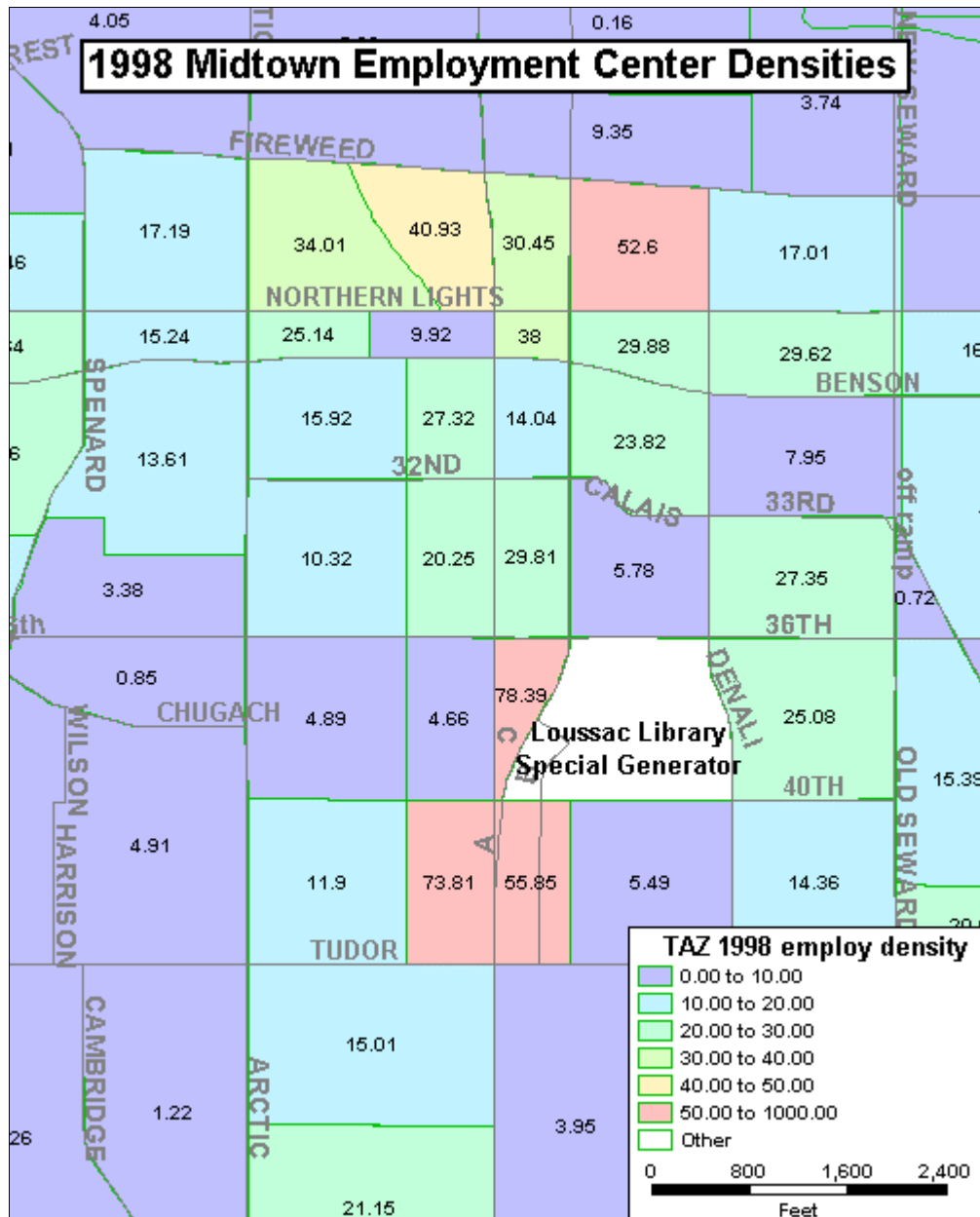
The Midtown employment center, on the other hand, is nowhere near as close to reaching the Anchorage 2020 objective of over 50 employees per acre. As of 1998, only four Traffic Analysis Zones (TAZ) in Midtown contained employment densities greater

than 50 employees per acre. (Note: TAZs are the basic building blocks of land use and trip data used by the Anchorage Transportation Demand Model.) These were primarily clustered around 40th and C Streets and include the Frontier Building, Alaska USA, and the area centered on B Street, which contains several medium-rise office buildings. The TAZ containing the Denali Towers, located east of Denali Street between Fireweed and Northern Lights Boulevard also exceeded 50 employees per acre.





Figure 6



#### 4.2.3 Future Projected Employment Densities

Figures 7 and 8 show the results of using the above-described assumptions in the land use allocation model. As Figure 7 reveals, Downtown employment densities are expected to continue to increase (albeit slowly) over the next 20 years, primarily due to redevelopment activities. Downtown still contains numerous parking lots and underdeveloped lots, which are expected to provide attractive development opportunities

over the next 20 years as land becomes scarcer in the Anchorage Bowl. A recent example of this type of redevelopment involves the new 20-story Marriott Hotel, which was built on a parking lot at the southeast corner of I Street and 7th Avenue. The 20-year projection for Downtown assumed that the same employment densities would occur as in the past.

Employment center densities greater than 50 employees per acre are not attainable for every traffic analysis zone identified throughout the entire Midtown employment centers. This density is not attainable because there is simply not enough office employment forecast to occur in these traffic analysis zones to achieve 50 employees per acre.

Nevertheless, the Midtown major employment area is expected to achieve substantial employment density gains over the next 20 years, with the following three subareas expected to reach the 50 employees per acre threshold:

- The area west of C Street and north of 40th Avenue where the new ASRC headquarters building has recently been built.
- The area north of Northern Lights Blvd and between the Seward Highway and Arctic Blvd where there is a substantial amount of redevelopable land.
- The area east of Denali Street between 36th and Northern Lights Blvd.

In summary, the composition and density of forecast employment growth will make it more difficult, but not impossible, to achieve the employment densities proposed for employment centers in Anchorage 2020. Progress toward that goal will require that office, retail, and service employment be funneled into narrowly drawn development districts and multi-story mixed use buildings, with parking structures and heavier transit use to support more intense mixed uses.

Figure 7

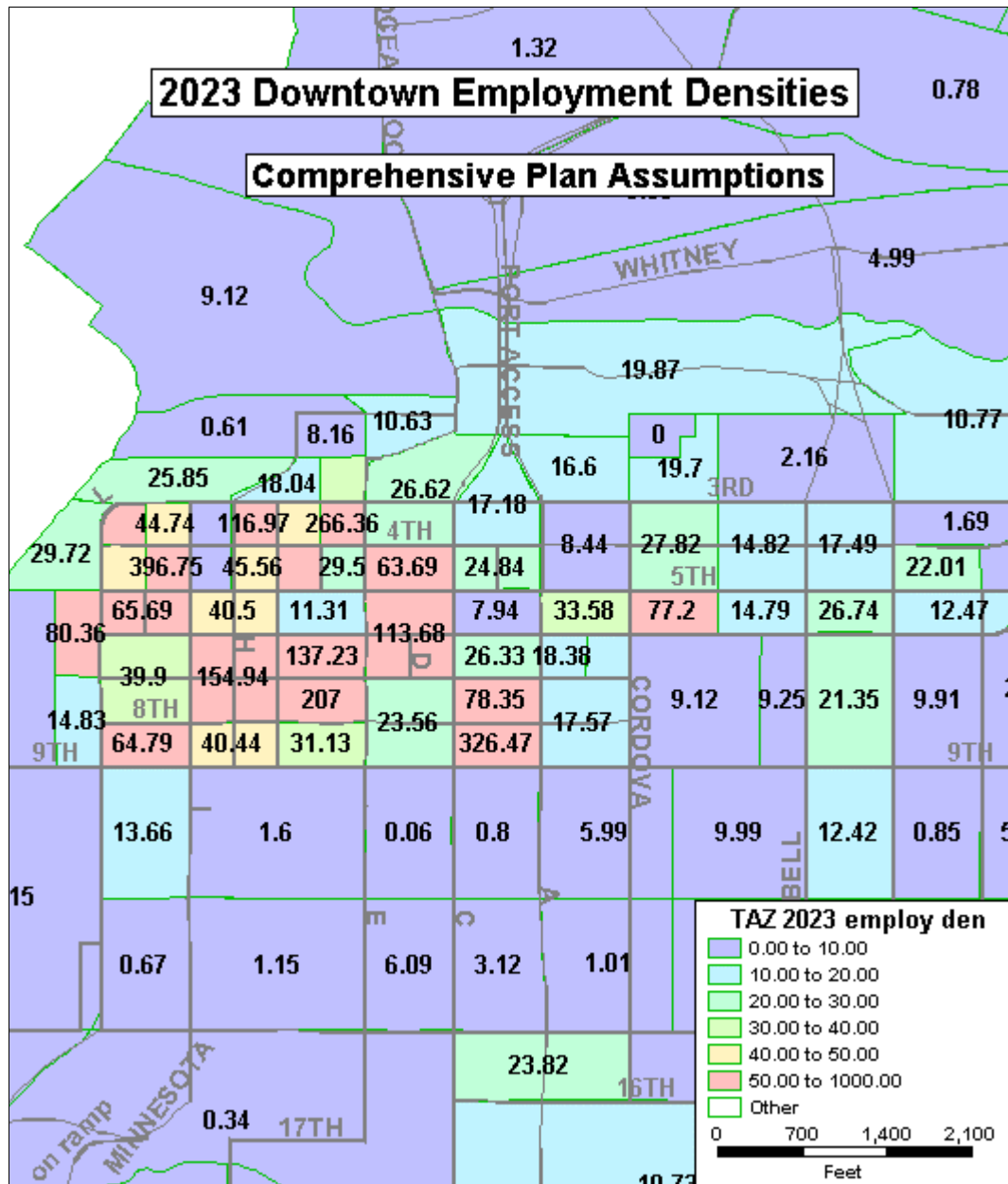
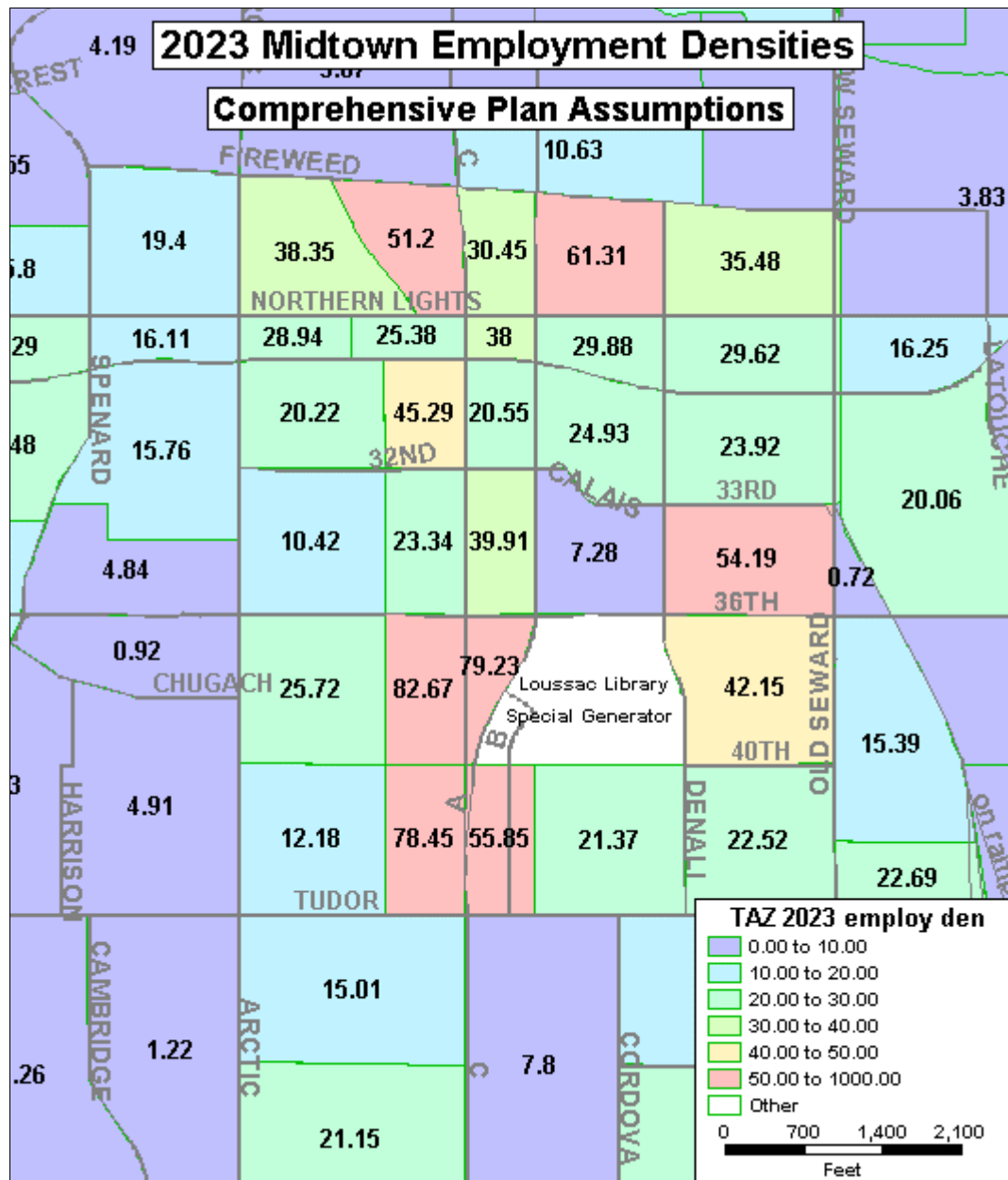


Figure 8



### 4.3 Town Centers

Development of town centers will promote mixed use, higher density development, and alternative transportation modes, such as public transit and pedestrian connections, throughout the town center. Anchorage 2020 has identified seven areas as sites for development of town centers (Abbott, Dowling, Muldoon, Northway, Spenard, Sand

Lake, and Huffman). There are currently three town center plans (Northway, Abbott, and Muldoon) being developed from the seven identified in the Comprehensive Plan. Each of the town centers will be designed to promote new ways of thinking about the land use and function of an area. Anchorage 2020 defines a town center as a place:

“...designed to function as a focal point for community activities for seven discrete areas of the Bowl. They are intended to be located 2 to 4 miles apart, with each encompassing an area that services 30,000 to 40,000 people. Town centers are generally one-half to one mile in diameter. Their core is to be a mix of community servicing retail, public services, and public/civic facilities, including or surrounded by medium- to high-density residential development. Necessary to their design is an efficient pedestrian access network connecting the core uses, residential neighborhoods, and transit facilities. Most town centers shown on the Land Use Policy Map already have various elements of this concept.” (p. 53).

The town center concept, as it evolves, will give people the option to live near their workplace or to transit serving their workplace, and has the potential to reduce per capita vehicle miles traveled. The most specific policy guidance for determining future land use can be found in Policy 24. It states:

Town centers are designated on the Land Use Policy Map in seven areas of the Bowl. Other areas may become town centers. Development of town center strategies shall provide direction for the design and construction of public improvements and to provide guidance and incentives for private investment. Existing and new centers shall be characterized by the following:

- a) Generally ½ to 1 mile in diameter;
- b) A commercial core consisting of a range of commercial retail/services and public facilities that serve the surrounding neighborhoods. The configuration of shops in the core area is oriented to the street with parking behind the building when possible;
- c) Public facilities including but not limited to indoor recreational facilities, parks, branch libraries, ice skating arenas, schools, post office, and transit facilities;
- d) Medium- to high-density residential development in and surrounding the core, consisting of a combination of duplexes, townhouses, and apartment buildings with overall density targets of 12-40 dwelling units per acre;
- e) An enhanced pedestrian environment with good connections with and between the core and surrounding residential development; and
- f) Distinctive public spaces and public art that create a sense of place. (p. 76).

In an attempt to model the changes in land use that such a policy is intended to bring about, the following assumptions about town centers were made in the Land Use Allocation Model:

- The Town Center Plan for Muldoon, as proposed by Koonce, Pfeffer, Bettis in Sept. 2002, would be implemented. According to the draft Master Plan, approximately 1,200 housing units would be developed over a 10-year period. The development would also include about 98,000 square feet of retail space and 65,000 square feet of office space.
- The draft Abbott and Northway Town Center Plans prepared by Lennertz Coyle & Associates for the Municipality of Anchorage would be implemented. The proposed housing densities in the Northway Town Center range from 4-8 in the Neighborhood Residential zone located in the old Penland mobile home park, to 10-20 dwelling units per acre in the Town Center General zone west of Northway Drive. The proposed housing densities in the Abbott Town Center range from 8-12 dwelling units per acre in the Neighborhood General zone to 10-20 dwelling units per acre in the Town Center General zone. In general the housing densities of the purely residential portions of the town centers achieve a density greater than the 12 dwelling units per acre called for in the Anchorage 2020. The housing densities in the mixed-use areas (housing and retail mix) are around 10 dwelling units per acre.
- Densities in the remaining four town centers (Spenard, Jewel Lake, Huffman, and Dowling) were assumed to be similar to those that are being proposed in the planned town centers.
- Commercial development in town centers will be primarily retail with a limited amount of service development occurring. Commercial density in town centers are assumed to be similar to that which is typically found in commercial areas outside of the CBD.
- Mixed-use areas in town centers are assumed to contain both retail and housing with retail being developed at its full intensity (as if it were a stand alone development) and residential being at half its standard density (typically 8 to 10 dwelling units/acre).

Table 6 shows the projected increase in employment and housing that is expected to occur in each of the town centers as a result of the implementation of Anchorage 2020.

**Table 6  
Town Center Development**

	<i>Employment Increase 2002-2023</i>	<i>Housing Increase 2002-2023</i>	<i>Housing Increase 1998-2002</i>
Muldoon TC	609	1287	114
Northway TC	722	167	22
Dowling TC	295	498	472
Abbott TC	813	645	62
Huffman TC	280	34	148
Jewel Lake TC	246	230	130
Spenard TC	583	790	39

Overall, during the next 20 years, the seven town centers in the Anchorage Bowl are expected to attract an additional 3,550 jobs and 3,650 housing units. From Table 6 it appears that the town centers with the biggest opportunity for housing growth are Muldoon, Spenard, and Abbott. Huffman, Jewel Lake, and Dowling have experienced a substantial housing increase over the last four years. In the case of Huffman, most of the developable vacant land has been recently developed as housing and the opportunity for future housing development appears to be limited.

Depending on the market, town centers have the potential to capture a substantial percentage of the housing market in Anchorage. If the predictions in Table 6 materialize, town centers could account for almost 18% of the total housing market in the Anchorage Bowl. This would be a substantial change from the past few decades, when most of the new housing development occurred on the periphery of the Anchorage Bowl where vacant land was plentiful.

#### ***4.4 Transit Development Corridors***

This section defines the policies that pertain to the development of transit supportive development corridors. Anchorage 2020 designated five “transit supportive development corridors”. The intent of transit supportive development corridors is to create an adequate level of transit supportive residential density within walking distance to transit, to create a more conducive walking environment along those corridors, and then to increase the frequency of service along those routes.



The five transit supportive development corridors include:

- Jewel Lake Road/Spenard Road, between Dimond Blvd and 15th Avenue
- Arctic Blvd, between Dimond Blvd and 5th Avenue
- Lake Otis Parkway, between O'Malley Road and Northern Lights Blvd
- Muldoon Road, between Glenn Highway and DeBarr Road
- DeBarr Road/15th Avenue between Muldoon Road and Spenard Road

Anchorage 2020 is quite specific in guiding future residential density in transit supportive development corridors. The plan states in Policy 9 that “new residential development located within ¼ mile of the major street at the center of a Transit-Supportive Development Corridor shall achieve an overall average of equal to or greater than 8 dwelling units per acre. Individual lot densities shall be further defined through development of implementation strategies” (p. 72). The Plan expands on the nature of these policy areas in Policy 34, which states:

- Average residential densities equal to or greater than 8 du (dwelling unit)/acre occur within up to ¼ mile of the major street at the center of the corridor.
- New commercial development within these corridors is oriented to the street with parking on the side or rear of the building when possible.
- A goal for bus service within these corridors is 15-minute headways during peak hours and 30-minute headways during non-peak periods.
- A pedestrian-oriented environment is created, including expanded sidewalks, crosswalks, street furniture, bus shelters, and landscaping.
- Additional traffic lanes are not considered along these corridors unless there is no feasible alternative to solve a significant congestion problem. (p. 79)

To refine the policy guidance in Anchorage 2020 into the land use allocation model, the following assumptions were made about these corridors:

- Vacant and redevelopable residential property in areas along transit routes will experience increases in density to two-thirds allowed by current zoning within ¼ mile along the centerline. Past trends have typically resulted in density well below that allowed by zoning. The comprehensive plan outlines a number of strategies for achieving the density increases.
- To increase density above that envisioned under current zoning, it was assumed that vacant R-1 and R-2A properties would be developed at R-3 allowed densities. Readers should be cautioned that there are a number of other ways (aside from rezoning) that similar densities could be achieved. Rezoning is not being proposed, but rather, it was a convenient means of achieving the increased density within the Land Use Allocation Model.

The results of these assumptions are showed in Table 7. Within the next 20 years, the Land Use Allocation Model predicts that three of the transit supportive development

corridors will come very close to achieving the 8 dwelling units per acre threshold called for in Anchorage 2020. When all of the potentially developable land is developed, all of the corridors will either exceed or come close to the threshold.

**Table 7**  
**Transit Corridor Densities**  
**Gross Density (DU/Acre)**

<i>Transit Corridor</i>	<i>1998 Density</i>	<i>2023 Model Density</i>	<i>Potential Build out Density</i>
Lake Otis	3.19	5.31	7.6
Arctic	4.86	6.6	7.9
Jewel Lake-Spenard	5.85	7.5	8.7
Muldoon-DeBarr	5.4	7.46	9.0

#### **4.5 Redevelopment Areas**

Anchorage 2020 calls for infill (building on unused parcels in developed areas) and redevelopment (replacing or renovating obsolete buildings) as a means of adapting to changing housing demands, to revitalize older neighborhoods, to better use public infrastructure, and to create more housing closer to places of employment. Anchorage 2020 addresses infill and redevelopment areas stating:

- Neighborhoods and subareas in and around Downtown/Midtown and the University-Medical District are targeted for public/private reinvestment.
- Design standards address architectural compatibility and the impacts of higher densities (p. 52).

The Plan does not specifically provide density goals for redevelopment areas. However, it is clear that the overall objective of the plan is to increase housing density close to the major employment centers. The Plan states (see p. 51) that residential development near major employment centers will be at medium and high densities to enable people to live close to work. To refine the policy guidance in Anchorage 2020 into the traffic model to predict the most likely future conditions, the following assumptions were made about these corridors:

- Vacant and redevelopable residential property in redevelopment areas will experience increases in density to two-thirds allowed by current zoning districts. Past trends have typically resulted in density well below that allowed by zoning. The comprehensive plan outlines a number of strategies for achieving the density increases.

- To increase density above that envisioned under current zoning, it was assumed that vacant R-1 and R-2A properties would be developed at R-3 allowed densities. Readers should be cautioned that there are a number of other ways (aside from rezoning) that similar densities could be achieved. Rezoning is not being proposed, but rather, was a convenient means of achieving the increased density within the Land Use Allocation Model.

Table 8 shows what the projected increase in housing would be in 2023 with the implementation of the above-described policies. Due to the existence of a substantial amount of redevelopable R-3 and R-4 zoned land near the Downtown major employment area, nearly 1,200 new housing units are expected to be built in the neighborhoods surrounding Downtown by 2023. The small size of the University-Medical redevelopment area limits the potential for new housing near this major employment center.

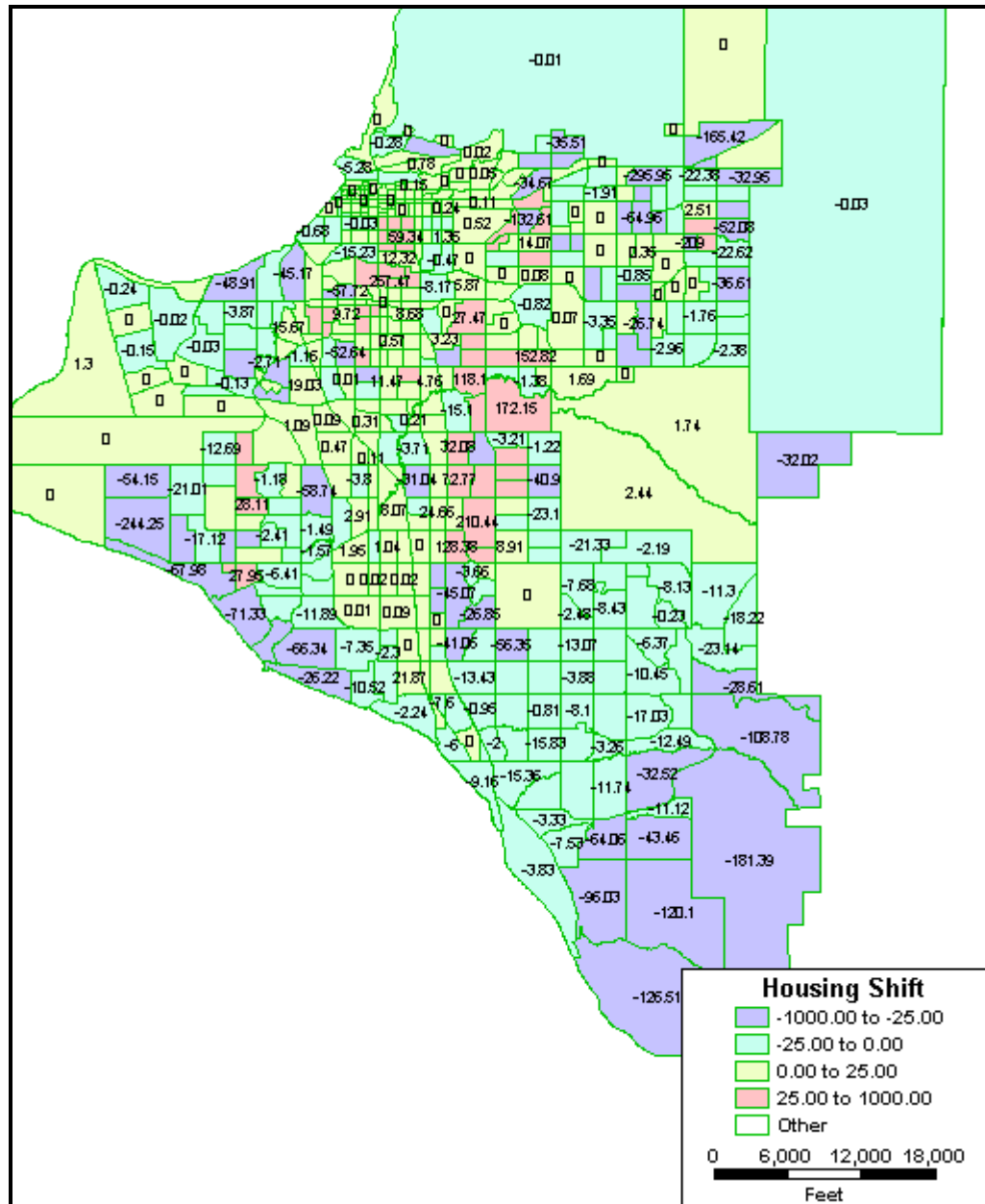
**Table 8**  
**Redevelopable Areas**  
**Forecasted Housing Increases**  
**1998 – 2023**

<i>Development Area</i>	<i>New Housing Units</i>
Downtown	1181
Midtown	914
University-Medical District	608

## **5.0 Summary of Housing Allocations**

Implementation of Anchorage 2020 is expected to shift both housing and employment. While Figures 7 and 8 show some shift in employment towards the Midtown major employment area, the shift will be much more dramatic with respect to housing. Figure 9 shows the difference between the housing distribution under the existing trends scenario and Anchorage 2020. As can be seen, there is a definite shift away from south Anchorage and the Hillside towards more central portions of the Anchorage Bowl, particularly near major employment centers, town centers and along transit corridors.

**Figure 9**  
**Housing Allocation Shift**  
**Difference between Anchorage 2020 and Existing Trends Assumptions**



## **6.0 References**

- Alaska Department of Labor (DOL). August 2002. Alaska Economic Trends. < <http://www.labor.state.ak.us/trends/trends.htm> > August 2002.
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**Appendix 1**  
**Redevelopable Land Use Inventory – Methodology**

## **Redevelopable Land Inventory - Methodology**

In the past, land use projections used in the Anchorage Transportation Model relied exclusively on vacant land inventories. This methodology is perfectly acceptable when there is an abundant supply of vacant land available for development. However, as Anchorage 2020 points out “vacant land can only meet part of the forecasted housing demand”. According to the Plan, the balance will be met through redevelopment. Moreover, Anchorage 2020 adopted strategies designed to promote the creation of more intensely developed town centers, major employment centers, redevelopment areas, and transit supportive development corridors in already developed areas. It is assumed that some redevelopment will be required in order to fulfill these objectives.

The new policies and objectives of Anchorage 2020 required that the existing vacant land use database be supplemented with a new redevelopable land use inventory. At the present time the planning literature provides little guidance with respect to how to develop a redevelopable land use database. In designing the methodology, an attempt was made to utilize objective criteria as much as possible. However, given the data limitations, any methodology that is adopted would require some subjectivity.

The following is a brief description of the steps and major assumptions used in the study. It should be remembered that the primary purpose of this redevelopable land use study was to provide better information to be used as input into the transportation demand model. The model which estimates traffic volumes based on housing and employment densities will only forecast a change in traffic volumes if there is a significant increase in either the employment or housing densities. Therefore, the overriding principle used in the study was to identify those parcels in which there is a potential to significantly increase the density due to redevelopment. It should also be noted that this land use update was only completed for the Anchorage Bowl, since this is the area affected by the Anchorage 2020 Plan.

- 1) An initial list of potentially redevelopable parcels was developed using a criterion based on the appraised land value over total appraised property value (land plus buildings). Both 50% and 75% thresholds were tested. It was decided that 50% threshold should be used since it appeared to be the most conservative approach and was most likely to capture more of the redevelopable parcels than the 75% threshold. Thus, if the parcel scored higher than 50%, it was included in the list. (Source of Data: Municipality of Anchorage Property Appraisal CAMA files.)
- 2) A map identifying the potentially redevelopable parcels was created. Based on a review of this map, it was apparent that some of the parcels identified using the criteria described in Step 1 were not likely candidates for redevelopment. For example, the Aurora Village (Carrs Store) located on the southwest corner of Northern Lights and Minnesota Blvd. was initially identified as redevelopable using the criteria of land to total value. However, this retail center appears to be thriving.



Even if it were redeveloped, it would probably be redeveloped as another retail business use with more or less the same intensity.

- 3) Based on the mapping results, it was decided that a field survey would be necessary to further refine the redevelopable land use inventory. A team of two planners conducted a field survey during the summer of 2001. Each of the potentially redevelopable parcels in the Anchorage Bowl was surveyed. Residential parcels, which met the following criteria, were retained on the redevelopable list.

- Single family and duplex houses located in multi-family zoning districts
- Mobile home parks located in multi-family zoning districts where it was determined that the redevelopable density would be higher than the existing density.

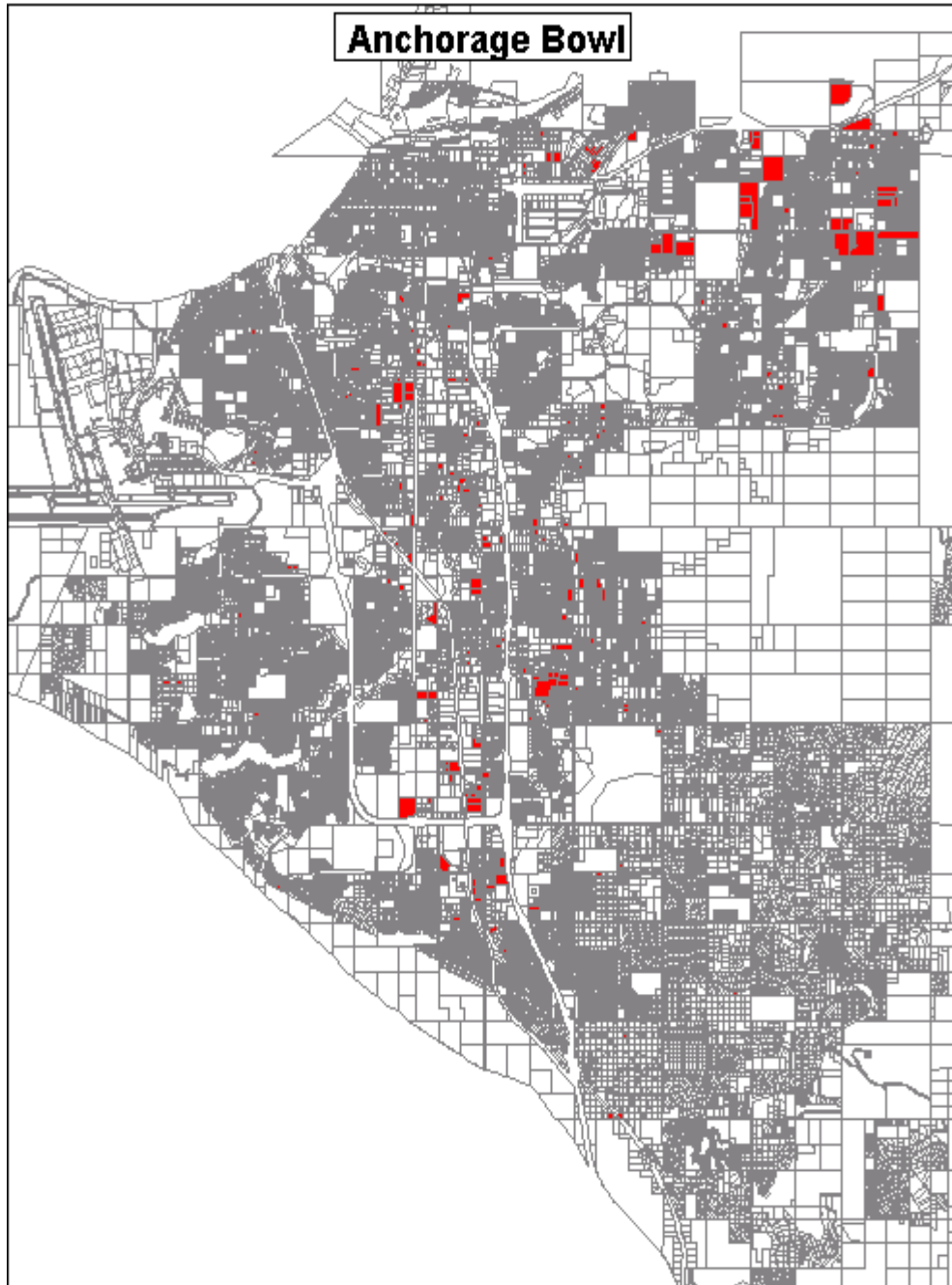
None of the potentially redevelopable multi-family housing in multi-family zoning districts were included in the redevelopable inventory since redevelopment would not increase the net density of the parcel.

All commercial parcels, which met the following criteria, were retained on the redevelopable list.

- Single family and duplex houses located in any commercial zoning district.
- Commercially developed lots with a minimum of investment and employment. For example, used car lots that contained a small sales office and may only have a few employees were considered to be redevelopable.

Less restrictive criteria were applied to commercial parcels located in major employment areas. This was due to the expectation that these areas would be redeveloped to a much higher density than other areas of town. Thus, if a retail strip commercial center met the land-to-total-value criteria described above, then it was retained on the list of redevelopable parcels, since it is probable that a significant number of employees would be added if it was redeveloped as office space. (Office employment densities are often more than twice the density of retail employment.)

**Figure A-1**  
**Anchorage Bowl Redevelopable Lands**



**Figure A-2**  
**Downtown Redevelopable Lands**



## **APPENDIX B**

### **Intersection Traffic Analysis Data Tables**

# Intersection Capacity Utilization Worksheet

2 2

Intersection Location: Lake Otis & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	1	2	2	0	1	3	1	1	2	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	316	1381	136	951	2403	149	485	1502	1442	83	602	296								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	351.4	1534.9	150.6	1057.2	2670.3	165.4	538.6	1669.4	1602.3	92.2	668.6	328.4								
14	Volume Combined	351.4	1534.9	150.6	1057.2	2835.7	0.0	0.0	2208.0	1602.3	92.2	668.6	328.4								
15	Volume Separate Left	351.4	1534.9		1057.2	2835.7		538.6	1669.4		92.2	668.6									
16	Lane Utilization Factor	1.000	0.952	1.000	0.971	0.952	1.000	1.000	0.908	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	0.991	0.850	0.950	0.988	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3617.6	1615.0	3505.3	3585.9	0.0	0.0	6816.6	1615.0	1805.0	3617.6	1615.0								
19	Saturated Flow Separate	1805.0	3617.6		3505.3	3585.9		3610.0	5175.6		1805.0	3617.6									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	27.3	59.4	13.1	42.2	110.7	0.0	NA	NA	138.9	NA	NA	28.5								
25	Adjusted Reference Time	31.3	63.4	17.1	46.2	114.7	8.0	NA	NA	142.9	NA	NA	32.5								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3585.9			#####			3617.6									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3585.9			3450.4			3617.6									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		59.4			110.7			45.3			25.9									
36	Ref Time By Movement	27.3	59.4		42.2	110.7		20.9	45.2		7.1	25.9									
37	Reference Time		59.4			110.7			45.3			25.9									
38	Adjusted Reference Time	63.4	63.4		114.7	114.7		49.3	49.3		29.9	29.9									
39	Summary	East West		North South																	
40	Protected Option	146.0		NA																	
41	Permitted Option	NA		NA																	
42	Split Option	178.1		79.2																	
43	Minimum	146.0		79.2																	
44	Combined	225.2																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	17.1	8.0	142.9	32.5																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	49.3	29.9	114.7	63.4																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	46.2	31.3	29.9	49.3																
51	Combined	112.6	69.1	287.5	145.2																
52	Intersection Capacity Utilization	205.3%																			
53	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

3 2

Intersection Location: Lake Otis & Dowling













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	2	1	2	2	1	2	2	1	2	2	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	336	89	193	48	175	156	451	1590	78	67	1286	354								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	140																			
13	Adjusted Volume	373.7	99.0	214.1	53.9	194.6	173.7	501.3	1767.0	86.4	74.8	1429.0	393.7								
14	Volume Combined	373.7	99.0	214.1	53.9	194.6	173.7	501.3	1767.0	86.4	74.8	1429.0	393.7								
15	Volume Separate Left	373.7	99.0		53.9	194.6		501.3	1767.0		74.8	1429.0									
16	Lane Utilization Factor	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0								
19	Saturated Flow Separate	3505.3	3617.6		3505.3	3617.6		3505.3	3617.6		3505.3	3617.6									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	14.9	3.8	18.6	2.2	7.5	15.1	20.0	68.4	7.5	3.0	55.3	34.1								
25	Adjusted Reference Time	18.9	8.0	22.6	8.0	11.5	19.1	24.0	72.4	11.5	8.0	59.3	38.1								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3617.6									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3617.6									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		3.8			7.5			68.4			55.3									
36	Ref Time By Movement	14.9	3.8		2.2	7.5		20.0	68.4		3.0	55.3									
37	Reference Time		14.9			7.5			68.4			55.3									
38	Adjusted Reference Time	18.9	18.9		11.5	11.5		72.4	72.4		59.3	59.3									
39	Summary	East West		North South																	
40	Protected Option	30.5		83.3																	
41	Permitted Option	NA		NA																	
42	Split Option	30.5		131.7																	
43	Minimum	30.5		83.3																	
44	Combined	113.8																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	22.6	19.1	11.5	38.1																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	72.4	59.3	11.5	8.0																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	8.0	18.9	8.0	24.0																
51	Combined	102.9	97.3	31.0	70.1																
52	Intersection Capacity Utilization	81.3%																			
53	Level Of Service	D																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

4 2

Intersection Location: Lake Otis & O'Malley













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement	 EBL	 EBT	 EBR	 WBL	 WBT	 WBR	 NBL	 NBT	 NBR	 SBL	 SBT	 SBR								
2	Lanes	1	1	1	1	1	1	1	2	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	200	135	32	18	624	294	165	471	27	54	219	269								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	140																			
13	Adjusted Volume	222.5	150.0	35.6	20.5	693.3	326.2	182.9	523.4	30.0	59.9	243.2	299.3								
14	Volume Combined	222.5	150.0	35.6	20.5	693.3	326.2	182.9	553.3	0.0	59.9	243.2	299.3								
15	Volume Separate Left	222.5	150.0		20.5	693.3		182.9	553.3		59.9	243.2									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.992	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	3588.2	0.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1900.0		1805.0	3588.2		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	17.3	11.1	3.1	1.6	51.1	28.3	14.2	21.6	0.0	4.6	17.9	25.9								
25	Adjusted Reference Time	21.3	15.1	8.0	8.0	55.1	32.3	18.2	25.6	8.0	8.6	21.9	29.9								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		1900.0			1900.0			3588.2			1900.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		1900.0			1900.0			3588.2			1900.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		11.1			51.1			21.6			17.9									
36	Ref Time By Movement	17.3	11.1		1.6	51.1		14.2	21.6		4.6	17.9									
37	Reference Time		17.3			51.1			21.6			17.9									
38	Adjusted Reference Time	21.3	21.3		55.1	55.1		25.6	25.6		21.9	21.9									
39	Summary	East West		North South																	
40	Protected Option	76.3		40.1																	
41	Permitted Option	NA		NA																	
42	Split Option	76.3		47.5																	
43	Minimum	76.3		40.1																	
44	Combined	116.5																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	8.0	32.3	8.0	29.9																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	25.6	21.9	55.1	15.1																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	8.0	21.3	8.6	18.2																
51	Combined	41.6	75.5	71.7	63.2																
52	Intersection Capacity Utilization	83.2%																			
53	Level Of Service	D																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

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Intersection Location: Lake Otis & Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	2	1	2	3	0	1	1	1	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	322	690	101	554	2417	155	275	588	272	92	828	622								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	140																			
13	Adjusted Volume	357.7	766.9	112.2	615.1	2685.6	172.4	305.9	653.2	302.4	102.1	920.2	691.0								
14	Volume Combined	357.7	766.9	112.2	615.1	2858.0	0.0	305.9	653.2	302.4	102.1	920.2	691.0								
15	Volume Separate Left	357.7	766.9		615.1	2858.0		305.9	653.2		102.1	920.2									
16	Lane Utilization Factor	0.971	0.952	1.000	0.971	0.908	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	0.991	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	3505.3	3617.6	1615.0	3505.3	5128.8	0.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	3505.3	3617.6		3505.3	5128.8		1805.0	1900.0		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	14.3	29.7	9.7	24.6	78.0	0.0	23.7	48.1	26.2	7.9	67.8	59.9								
25	Adjusted Reference Time	18.3	33.7	13.7	28.6	82.0	8.0	27.7	52.1	30.2	11.9	71.8	63.9								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			5128.8			1900.0			1900.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			5128.8			1900.0			1900.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		29.7			78.0			48.1			67.8									
36	Ref Time By Movement	14.3	29.7		24.6	78.0		23.7	48.1		7.9	67.8									
37	Reference Time		29.7			78.0			48.1			67.8									
38	Adjusted Reference Time	33.7	33.7		82.0	82.0		52.1	52.1		71.8	71.8									
39	Summary	East West		North South																	
40	Protected Option	100.3		99.5																	
41	Permitted Option	NA		NA																	
42	Split Option	115.7		123.9																	
43	Minimum	100.3		99.5																	
44	Combined	199.8																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	13.7	8.0	30.2	63.9																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	52.1	71.8	82.0	33.7																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	28.6	18.3	11.9	27.7																
51	Combined	94.4	98.1	124.1	125.3																
50	Intersection Capacity Utilization	142.7%																			
51	Level Of Service	H																			

Revision 00.4



## **Intersection 8:**

See Roundabout Analysis

# Intersection Capacity Utilization Worksheet

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Intersection Location: New Seward E Ramps & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement	 EBL	 EBT	 EBR	 WBL	 WBT	 WBR	 NBL	 NBT	 NBR	 SBL	 SBT	 SBR								
2	Lanes	1	2	0	0	2	1	1	1	1	0	0	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	153	1118	0	0	2046	205	0	751	637	0	0	0								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	140																			
13	Adjusted Volume	169.8	1242.0	0.0	0.0	2273.3	228.1	0.0	834.7	707.8	0.0	0.0	0.0								
14	Volume Combined	169.8	1242.0	0.0	0.0	2273.3	228.1	0.0	834.7	707.8	0.0	0.0	0.0								
15	Volume Separate Left	169.8	1242.0		0.0	2273.3		0.0	834.7		0.0	0.0									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3617.6	0.0	0.0	3617.6	1615.0	0.0	3800.0	1615.0	0.0	0.0	0.0								
19	Saturated Flow Separate	1805.0	3617.6		0.0	3617.6		3610.0	1900.0		0.0	0.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	13.2	48.1	0.0	0.0	88.0	19.8	NA	NA	61.4	NA	NA	0.0								
25	Adjusted Reference Time	17.2	52.1	0.0	0.0	92.0	23.8	NA	NA	65.4	NA	NA	0.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			1900.0			0.0									
28	Reference Time A		NA			NA			61.5			0.0									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			38.8			NA									
31	Reference Time Lefts	NA			NA			0.0			NA										
32	Reference Time		NA			NA			38.8			0.0									
33	Adjusted Reference Time		NA			NA			42.8			8.0									
34	Split Timing																				
35	Ref Time Combined		48.1			88.0			30.8			0.0									
36	Ref Time By Movement	13.2	48.1		0.0	88.0		0.0	61.5		0.0	0.0									
37	Reference Time		48.1			88.0			61.5			0.0									
38	Adjusted Reference Time	52.1	52.1		92.0	92.0		65.5	65.5		0.0	0.0									
	Summary	East West		North South																	
39	Protected Option	109.1		NA																	
40	Permitted Option	NA		42.8																	
41	Split Option	144.0		65.5																	
42	Minimum	109.1		42.8																	
43	Combined	151.9																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	0.0	23.8	65.4	0.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	42.8	0.0	92.0	52.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	0.0	17.2	0.0	65.5																
49	Combined	42.8	40.9	157.3	117.6																
50	Intersection Capacity Utilization	112.4%																			
51	Level Of Service	G																			













Revision 00.4

# Intersection Capacity Utilization Worksheet

11 2

**Intersection Location:** New Seward E Ramps & O'Malley  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 AM  
**Project:** East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	0	2	1	1	1	1	0	0	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	390	327	0	0	655	504	441	15	16	0	0	0								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	433.2	363.5	0.0	0.0	727.5	559.9	490.4	16.6	18.3	0.0	0.0	0.0								
14	Volume Combined	433.2	363.5	0.0	0.0	727.5	559.9	0.0	507.1	18.3	0.0	0.0	0.0								
15	Volume Separate Left	433.2	363.5		0.0	727.5		490.4	16.6		0.0	0.0									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.952	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3617.6	0.0	0.0	3617.6	1615.0	0.0	3616.2	1615.0	0.0	0.0	0.0								
19	Saturated Flow Separate	1805.0	3617.6		0.0	3617.6		3610.0	1900.0		0.0	0.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	33.6	14.1	0.0	0.0	28.2	48.5	NA	NA	1.6	NA	NA	0.0								
25	Adjusted Reference Time	37.6	18.1	0.0	0.0	32.2	52.5	NA	NA	8.0	NA	NA	0.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			#####			0.0									
28	Reference Time A		NA			NA			NA			0.0									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			27.6			0.0									
31	Reference Time Lefts	NA			NA			27.0			0.0										
32	Reference Time		NA			NA			27.6			0.0									
33	Adjusted Reference Time		NA			NA			31.6			8.0									
34	Split Timing																				
35	Ref Time Combined		14.1			28.2			19.6			0.0									
36	Ref Time By Movement	33.6	14.1		0.0	28.2		19.0	1.2		0.0	0.0									
37	Reference Time		33.6			28.2			19.6			0.0									
38	Adjusted Reference Time	37.6	37.6		32.2	32.2		23.6	23.6		0.0	0.0									
	<b>Summary</b>	<b>East West</b>		<b>North South</b>																	
39	Protected Option	69.8		NA																	
40	Permitted Option	NA		31.6																	
41	Split Option	69.8		23.6																	
42	Minimum	69.8		23.6																	
43	Combined	93.4																			
	<b>Right Turns</b>	<b>EBR</b>	<b>WBR</b>	<b>NBR</b>	<b>SBR</b>																
44	Adjusted Reference Time	0.0	52.5	8.0	0.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	23.6	0.0	32.2	18.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	0.0	37.6	0.0	23.6																
49	Combined	23.6	52.5	40.2	41.7																
50	Intersection Capacity Utilization	66.7%																			
51	Level Of Service	B																			













Revision 00.4

# Intersection Capacity Utilization Worksheet

12 2

**Intersection Location:** New Seward W Ramps & Dimond  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 AM  
**Project:** East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	0	2	1	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes										
4	Volume	0	388	63	25	588	0	0	0	0	195	340	288								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	0.0	431.1	70.0	27.5	653.1	0.0	0.0	0.0	0.0	216.7	378.0	319.7								
14	Volume Combined	0.0	431.1	70.0	27.5	653.1	0.0	0.0	0.0	0.0	0.0	594.7	319.7								
15	Volume Separate Left	0.0	431.1		27.5	653.1		0.0	0.0		216.7	378.0									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.982	0.850								
18	Saturated Flow Combined	0.0	3617.6	1615.0	1805.0	3617.6	0.0	0.0	0.0	0.0	0.0	3730.8	1615.0								
19	Saturated Flow Separate	0.0	3617.6		1805.0	3617.6		0.0	0.0		3610.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	0.0	16.7	6.1	2.1	25.3	0.0	NA	NA	0.0	NA	NA	27.7								
25	Adjusted Reference Time	0.0	20.7	10.1	8.0	29.3	0.0	NA	NA	0.0	NA	NA	31.7								
26	Permitted Option Allowed		TRUE			TRUE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			0.0			-4963.7									
28	Reference Time A		16.7			25.3			0.0			NA									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			NA			30.3									
31	Reference Time Lefts	NA			NA			NA			16.4										
32	Reference Time		16.7			25.3			0.0			30.3									
33	Adjusted Reference Time		20.7			29.3			8.0			34.3									
34	Split Timing																				
35	Ref Time Combined		16.7			25.3			0.0			22.3									
36	Ref Time By Movement	0.0	16.7		2.1	25.3		0.0	0.0		8.4	27.8									
37	Reference Time		16.7			25.3			0.0			27.8									
38	Adjusted Reference Time	20.7	20.7		29.3	29.3		0.0	0.0		31.8	31.8									
	<b>Summary</b>	<b>East West</b>		<b>North South</b>																	
39	Protected Option	29.3		NA																	
40	Permitted Option	29.3		34.3																	
41	Split Option	50.0		31.8																	
42	Minimum	29.3		31.8																	
43	Combined	61.1																			
	<b>Right Turns</b>	<b>EBR</b>	<b>WBR</b>	<b>NBR</b>	<b>SBR</b>																
44	Adjusted Reference Time	10.1	0.0	0.0	31.7																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	31.8	29.3	20.7																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	0.0	31.8	0.0																
49	Combined	18.1	31.8	61.1	52.4																
50	Intersection Capacity Utilization	43.7%																			
51	Level Of Service	A																			

Revision 00.4

**Intersection 13:**  
See Roundabout Analysis

# Intersection Capacity Utilization Worksheet

14.2

Intersection Location: New Seward W Ramps &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	0	2	1	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes										
4	Volume	0	1236	124	536	2260	0	0	0	0	50	21	148								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	130																			
13	Adjusted Volume	0.0	1373.3	138.0	595.1	2511.3	0.0	0.0	0.0	0.0	55.6	23.6	164.0								
14	Volume Combined	0.0	1373.3	138.0	595.1	2511.3	0.0	0.0	0.0	0.0	0.0	79.2	164.0								
15	Volume Separate Left	0.0	1373.3		595.1	2511.3		0.0	0.0		55.6	23.6									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.965	0.850								
18	Saturated Flow Combined	0.0	3617.6	1615.0	1805.0	3617.6	0.0	0.0	0.0	0.0	0.0	3666.7	1615.0								
19	Saturated Flow Separate	0.0	3617.6		1805.0	3617.6		0.0	0.0		3610.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	0.0	53.1	12.0	46.2	97.2	0.0	NA	NA	0.0	NA	NA	14.2								
25	Adjusted Reference Time	0.0	57.1	16.0	50.2	101.2	0.0	NA	NA	0.0	NA	NA	18.2								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			0.0			139.3									
28	Reference Time A		NA			NA			0.0			23.8									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			0.0			11.0									
31	Reference Time Lefts	NA			NA			0.0			10.2										
32	Reference Time		NA			NA			0.0			11.0									
33	Adjusted Reference Time		NA			NA			8.0			15.0									
34	Split Timing																				
35	Ref Time Combined		53.1			97.2			0.0			3.0									
36	Ref Time By Movement	0.0	53.1		46.2	97.2		0.0	0.0		2.2	1.7									
37	Reference Time		53.1			97.2			0.0			3.0									
38	Adjusted Reference Time	57.1	57.1		101.2	101.2		0.0	0.0		8.0	8.0									
	Summary	East West		North South																	
39	Protected Option	107.3		NA																	
40	Permitted Option	NA		15.0																	
41	Split Option	158.3		8.0																	
42	Minimum	107.3		8.0																	
43	Combined	115.3																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	16.0	0.0	0.0	18.2																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	8.0	101.2	57.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	50.2	0.0	8.0	0.0																
49	Combined	66.1	8.0	109.2	75.4																
50	Intersection Capacity Utilization	82.4%																			
51	Level Of Service	D																			













Revision 00.4

# Intersection Capacity Utilization Worksheet

16 2

**Intersection Location:** New Seward W Ramps & O'Malley  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 AM  
**Project:** East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	0	736	280	25	753	0	0	0	0	35	18	286								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	0.0	817.4	311.4	27.3	837.2	0.0	0.0	0.0	0.0	39.0	19.5	318.3								
14	Volume Combined	0.0	1128.8	0.0	27.3	837.2	0.0	0.0	0.0	0.0	39.0	19.5	318.3								
15	Volume Separate Left	0.0	1128.8		27.3	837.2		0.0	0.0		39.0	19.5									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	0.959	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3467.9	0.0	1805.0	3617.6	0.0	0.0	0.0	0.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	3467.9		1805.0	3617.6		0.0	0.0		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	0.0	45.6	0.0	2.1	32.4	0.0	0.0	0.0	0.0	3.0	1.4	27.6								
25	Adjusted Reference Time	0.0	49.6	8.0	8.0	36.4	0.0	0.0	0.0	0.0	8.0	8.0	31.6								
26	Permitted Option Allowed		TRUE			TRUE			TRUE			TRUE									
27	Adjusted Saturation A		3467.9			3617.6			0.0			1900.0									
28	Reference Time A		45.6			32.4			0.0			1.4									
29	Adjusted Saturation B		3467.9			3617.6			0.0			1900.0									
30	Reference Time B		NA			NA			0.0			1.4									
31	Reference Time Lefts	NA			NA			0.0			11.0										
32	Reference Time		45.6			32.4			0.0			1.4									
33	Adjusted Reference Time		49.6			36.4			8.0			8.0									
34	Split Timing																				
35	Ref Time Combined		45.6			32.4			0.0			1.4									
36	Ref Time By Movement	0.0	45.6		2.1	32.4		0.0	0.0		3.0	1.4									
37	Reference Time		45.6			32.4			0.0			3.0									
38	Adjusted Reference Time	49.6	49.6		36.4	36.4		0.0	0.0		8.0	8.0									
	<b>Summary</b>	<b>East West</b>		<b>North South</b>																	
39	Protected Option	57.6		8.0																	
40	Permitted Option	49.6		8.0																	
41	Split Option	86.0		8.0																	
42	Minimum	49.6		8.0																	
43	Combined	57.6																			
	<b>Right Turns</b>	<b>EBR</b>	<b>WBR</b>	<b>NBR</b>	<b>SBR</b>																
44	Adjusted Reference Time	8.0	0.0	0.0	31.6																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	8.0	36.4	49.6																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	0.0	8.0	0.0																
49	Combined	16.0	8.0	44.4	81.2																
50	Intersection Capacity Utilization	58.0%																			
51	Level Of Service	A																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

17 2

Intersection Location: Old Seward &amp; Dimond













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	3	1	2	2	1	2	2	1	2	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	84	471	225	325	461	121	292	280	139	184	442	28								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	110																			
13	Adjusted Volume	93.1	523.0	249.9	361.2	511.8	133.9	324.1	311.2	154.9	204.4	491.4	31.5								
14	Volume Combined	93.1	523.0	249.9	361.2	511.8	133.9	324.1	311.2	154.9	204.4	522.9	0.0								
15	Volume Separate Left	93.1	523.0		361.2	511.8		324.1	311.2		204.4	522.9									
16	Lane Utilization Factor	1.000	0.908	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.991	0.850								
18	Saturated Flow Combined	1805.0	5175.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3585.0	0.0								
19	Saturated Flow Separate	1805.0	5175.6		3505.3	3617.6		3505.3	3617.6		3505.3	3585.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	7.2	14.1	21.7	14.4	19.8	11.6	12.9	12.0	13.4	8.2	20.4	0.0								
25	Adjusted Reference Time	11.2	18.1	25.7	18.4	23.8	15.6	16.9	16.0	17.4	12.2	24.4	8.0								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		5175.6			3617.6			3617.6			3585.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		5175.6			3617.6			3617.6			3585.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		14.1			19.8			12.0			20.4									
36	Ref Time By Movement	7.2	14.1		14.4	19.8		12.9	12.0		8.2	20.4									
37	Reference Time		14.1			19.8			12.9			20.4									
38	Adjusted Reference Time	18.1	18.1		23.8	23.8		16.9	16.9		24.4	24.4									
39	Summary	East West		North South																	
40	Protected Option	36.6		41.4																	
41	Permitted Option	NA		NA																	
42	Split Option	42.0		41.4																	
43	Minimum	36.6		41.4																	
44	Combined	77.9																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	25.7	15.6	17.4	8.0																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	16.0	24.4	23.8	18.1																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	18.4	11.2	12.2	16.9																
51	Combined	60.1	51.3	53.4	43.1																
52	Intersection Capacity Utilization	55.7%																			
53	Level Of Service	A																			

Revision 00.4



# Intersection Capacity Utilization Worksheet

18 2

Intersection Location: Old Seward & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	44	441	64	124	571	175	66	139	125	71	187	31
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	49.4	489.9	70.8	137.8	634.8	194.4	73.2	153.9	139.0	79.1	207.6	34.6
14	Volume Combined	49.4	489.9	70.8	137.8	634.8	194.4	73.2	153.9	139.0	79.1	242.1	0.0
15	Volume Separate Left	49.4	489.9		137.8	634.8		73.2	153.9		79.1	242.1	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.979	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3540.1	0.0
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3540.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	3.8	19.0	6.1	10.7	24.6	16.9	5.7	6.0	12.0	6.1	9.6	0.0
25	Adjusted Reference Time	8.0	23.0	10.1	14.7	28.6	20.9	9.7	10.0	16.0	10.1	13.6	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3540.1	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3540.1	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		19.0			24.6			6.0			9.6	
36	Ref Time By Movement	3.8	19.0		10.7	24.6		5.7	6.0		6.1	9.6	
37	Reference Time		19.0			24.6			6.0			9.6	
38	Adjusted Reference Time	23.0	23.0		28.6	28.6		10.0	10.0		13.6	13.6	
39	Summary	East West		North South									
40	Protected Option	37.6		23.3									
41	Permitted Option	NA		NA									
42	Split Option	51.5		23.5									
43	Minimum	37.6		23.3									
44	Combined	60.9											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	10.1	20.9	16.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	10.0	13.6	28.6	23.0								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	14.7	8.0	10.1	9.7								
51	Combined	34.8	42.4	54.7	40.6								
52	Intersection Capacity Utilization	43.5%											
53	Level Of Service	A											

Revision 00.4

# Intersection Capacity Utilization Worksheet

19 2

Intersection Location: Old Seward &amp; Dowling













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	1	1	1	1	1	1	1	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	119	315	104	201	432	564	184	649	294	135	215	58								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	131.8	350.1	116.1	223.8	479.7	626.6	204.3	720.7	326.9	149.5	238.5	63.9								
14	Volume Combined	131.8	350.1	116.1	223.8	479.7	626.6	204.3	720.7	326.9	149.5	238.5	63.9								
15	Volume Separate Left	131.8	350.1		223.8	479.7		204.3	720.7		149.5	238.5									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1900.0		1805.0	1900.0		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	10.2	25.8	10.1	17.4	35.3	54.3	15.8	53.1	28.3	11.6	17.6	5.5								
25	Adjusted Reference Time	14.2	29.8	14.1	21.4	39.3	58.3	19.8	57.1	32.3	15.6	21.6	9.5								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		1900.0			1900.0			1900.0			1900.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		1900.0			1900.0			1900.0			1900.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		25.8			35.3			53.1			17.6									
36	Ref Time By Movement	10.2	25.8		17.4	35.3		15.8	53.1		11.6	17.6									
37	Reference Time		25.8			35.3			53.1			17.6									
38	Adjusted Reference Time	29.8	29.8		39.3	39.3		57.1	57.1		21.6	21.6									
	Summary	East West		North South																	
39	Protected Option	53.6		72.7																	
40	Permitted Option	NA		NA																	
41	Split Option	69.1		78.7																	
42	Minimum	53.6		72.7																	
43	Combined	126.3																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	14.1	58.3	32.3	9.5																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	57.1	21.6	39.3	29.8																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	21.4	14.2	15.6	19.8																
49	Combined	92.5	94.1	87.3	59.2																
50	Intersection Capacity Utilization	90.2%																			
51	Level Of Service	E																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

20 2

Intersection Location: Old Seward & International













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	1	1	1	1	2	0	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	320	80	339	23	20	22	377	594	23	42	359	139								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	130																			
13	Adjusted Volume	355.7	88.9	376.4	25.8	22.1	24.6	418.9	660.1	25.9	47.0	399.2	154.7								
14	Volume Combined	355.7	465.3	0.0	25.8	22.1	24.6	418.9	686.0	0.0	47.0	553.9	0.0								
15	Volume Separate Left	355.7	465.3		25.8	22.1		418.9	686.0		47.0	553.9									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	0.879	0.850	0.950	1.000	0.850	0.950	0.994	0.850	0.950	0.958	0.850								
18	Saturated Flow Combined	1805.0	3178.6	0.0	1805.0	1900.0	1615.0	1805.0	3597.1	0.0	1805.0	3466.0	0.0								
19	Saturated Flow Separate	1805.0	3178.6		1805.0	1900.0		1805.0	3597.1		1805.0	3466.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	27.6	20.5	0.0	2.0	1.6	2.1	32.5	26.7	0.0	3.6	22.4	0.0								
25	Adjusted Reference Time	31.6	24.5	8.0	8.0	8.0	8.0	36.5	30.7	8.0	8.0	26.4	8.0								
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE									
27	Adjusted Saturation A		3178.6			1900.0			3597.1			3466.0									
28	Reference Time A		NA			1.6			NA			NA									
29	Adjusted Saturation B		3178.6			1900.0			3597.1			3466.0									
30	Reference Time B		20.5			NA			NA			NA									
31	Reference Time Lefts	35.6			NA			NA			NA										
32	Reference Time		35.6			1.6			NA			NA									
33	Adjusted Reference Time		39.6			8.0			NA			NA									
34	Split Timing																				
35	Ref Time Combined		20.5			1.6			26.7			22.4									
36	Ref Time By Movement	27.6	20.5		2.0	1.6		32.5	26.7		3.6	22.4									
37	Reference Time		27.6			2.0			32.5			22.4									
38	Adjusted Reference Time	31.6	31.6		8.0	8.0		36.5	36.5		26.4	26.4									
39	Summary	East West		North South																	
40	Protected Option	39.6		62.9																	
41	Permitted Option	39.6		NA																	
42	Split Option	39.6		62.9																	
43	Minimum	39.6		62.9																	
44	Combined	102.4																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	8.0	8.0	8.0	8.0																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	30.7	26.4	8.0	24.5																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	8.0	31.6	8.0	36.5																
51	Combined	46.7	66.0	24.0	69.0																
52	Intersection Capacity Utilization	73.2%																			
53	Level Of Service	C																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

21 2

Intersection Location: Old Seward &amp; O'Malley













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	153	630	222	157	705	272	213	316	159	89	125	83								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	130																			
13	Adjusted Volume	169.9	700.2	246.4	174.0	783.1	301.8	236.3	350.8	176.5	98.9	139.1	92.0								
14	Volume Combined	169.9	700.2	246.4	174.0	783.1	301.8	236.3	350.8	176.5	98.9	231.1	0.0								
15	Volume Separate Left	169.9	700.2		174.0	783.1		236.3	350.8		98.9	231.1									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.940	0.850								
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3401.6	0.0								
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3401.6									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	13.2	27.1	21.4	13.5	30.3	26.2	18.3	13.6	15.3	7.7	9.5	0.0								
25	Adjusted Reference Time	17.2	31.1	25.4	17.5	34.3	30.2	22.3	17.6	19.3	11.7	13.5	8.0								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3401.6									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3401.6									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		27.1			30.3			13.6			9.5									
36	Ref Time By Movement	13.2	27.1		13.5	30.3		18.3	13.6		7.7	9.5									
37	Reference Time		27.1			30.3			18.3			9.5									
38	Adjusted Reference Time	31.1	31.1		34.3	34.3		22.3	22.3		13.5	13.5									
	Summary	East West		North South																	
39	Protected Option	51.5		35.8																	
40	Permitted Option	NA		NA																	
41	Split Option	65.4		35.8																	
42	Minimum	51.5		35.8																	
43	Combined	87.3																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	25.4	30.2	19.3	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	17.6	13.5	34.3	31.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	17.5	17.2	11.7	22.3																
49	Combined	60.4	60.9	65.3	61.4																
50	Intersection Capacity Utilization	62.4%																			
51	Level Of Service	B																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

22 2

Intersection Location: Old Seward & 36th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement	 EBL	 EBT	 EBR	 WBL	 WBT	 WBR	 NBL	 NBT	 NBR	 SBL	 SBT	 SBR
2	Lanes	1	2	0	1	2	0	1	1	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	23	826	0	339	1593	0	131	314	0	123	370	0
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	25.6	917.7	0.0	376.3	1770.1	0.0	145.9	348.6	0.0	136.6	411.2	0.0
14	Volume Combined	25.6	917.7	0.0	376.3	1770.1	0.0	145.9	348.6	0.0	136.6	411.2	0.0
15	Volume Separate Left	25.6	917.7		376.3	1770.1		145.9	348.6		136.6	411.2	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	1805.0	3617.6	0.0	1805.0	3617.6	0.0	1805.0	1900.0	1615.0	1805.0	3617.6	0.0
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	1900.0		1805.0	3617.6	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	2.0	35.5	0.0	29.2	68.5	0.0	11.3	25.7	0.0	10.6	15.9	0.0
25	Adjusted Reference Time	8.0	39.5	0.0	33.2	72.5	0.0	15.3	29.7	0.0	14.6	19.9	0.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			1900.0			3617.6	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			1900.0			3617.6	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		35.5			68.5			25.7			15.9	
36	Ref Time By Movement	2.0	35.5		29.2	68.5		11.3	25.7		10.6	15.9	
37	Reference Time		35.5			68.5			25.7			15.9	
38	Adjusted Reference Time	39.5	39.5		72.5	72.5		29.7	29.7		19.9	19.9	
39	Summary	East West		North South									
40	Protected Option	80.5		44.3									
41	Permitted Option	NA		NA									
42	Split Option	112.0		49.6									
43	Minimum	80.5		44.3									
44	Combined	124.8											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	0.0	0.0	0.0	0.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	29.7	19.9	72.5	39.5								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	33.2	8.0	14.6	15.3								
51	Combined	62.9	27.9	87.1	54.8								
50	Intersection Capacity Utilization	89.1%											
51	Level Of Service	D											

Revision 00.4

# Intersection Capacity Utilization Worksheet

23 2

Intersection Location: Abbott &amp; Abbott Loop Rd













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	1	1	1	0	0	1	1	1	1	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	57	568	12	80	1297	146	44	349	0	5	289	427								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	63.8	631.1	13.9	88.4	1441.6	162.8	48.4	387.6	0.0	5.6	320.6	473.9								
14	Volume Combined	63.8	631.1	13.9	88.4	1604.3	0.0	0.0	436.0	0.0	5.6	794.5	0.0								
15	Volume Separate Left	63.8	631.1		88.4	1604.3		48.4	387.6		5.6	794.5									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	0.985	0.850	0.950	0.994	0.850	0.950	0.911	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1871.1	0.0	0.0	1889.4	1615.0	1805.0	1730.0	0.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1871.1		1805.0	1900.0		1805.0	1730.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	4.9	46.5	1.2	6.9	120.0	0.0	NA	NA	0.0	NA	NA	0.0								
25	Adjusted Reference Time	8.9	50.5	8.0	10.9	124.0	8.0	NA	NA	0.0	NA	NA	8.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		1900.0			1871.1			365.9			1730.0									
28	Reference Time A		NA			NA			148.3			64.3									
29	Adjusted Saturation B		1900.0			1871.1			0.0			1730.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			148.3			64.3									
33	Adjusted Reference Time		NA			NA			152.3			68.3									
34	Split Timing																				
35	Ref Time Combined		46.5			120.0			32.3			64.3									
36	Ref Time By Movement	4.9	46.5		6.9	120.0		3.8	28.6		0.4	64.3									
37	Reference Time		46.5			120.0			32.3			64.3									
38	Adjusted Reference Time	50.5	50.5		124.0	124.0		36.3	36.3		68.3	68.3									
39	Summary	East West		North South																	
40	Protected Option	133.0		NA																	
41	Permitted Option	NA		152.3																	
42	Split Option	174.5		104.6																	
43	Minimum	133.0		104.6																	
44	Combined	237.6																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	8.0	8.0	0.0	8.0																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	36.3	68.3	124.0	50.5																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	10.9	8.9	68.3	36.3																
51	Combined	55.2	85.2	192.3	94.8																
52	Intersection Capacity Utilization	169.7%																			
53	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

26 2

Intersection Location: Muldoon &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	0	1	0	0	0	1	2	0	0	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	129	0	35	0	0	0	347	893	0	0	1507	443
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	110											
13	Adjusted Volume	143.3	0.0	39.1	0.0	0.0	0.0	385.8	991.9	0.0	0.0	1674.3	492.4
14	Volume Combined	143.3	0.0	39.1	0.0	0.0	0.0	385.8	991.9	0.0	0.0	2166.7	0.0
15	Volume Separate Left	143.3	0.0		0.0	0.0		385.8	991.9		0.0	2166.7	
16	Lane Utilization Factor	0.971	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.966	0.850
18	Saturated Flow Combined	3505.3	0.0	1615.0	0.0	0.0	0.0	1805.0	3617.6	0.0	0.0	3494.3	0.0
19	Saturated Flow Separate	3505.3	0.0		0.0	0.0		1805.0	3617.6		0.0	3494.3	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	5.7	0.0	3.4	0.0	0.0	0.0	29.9	38.4	0.0	0.0	86.8	0.0
25	Adjusted Reference Time	9.7	0.0	8.0	0.0	0.0	0.0	33.9	42.4	0.0	0.0	90.8	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		0.0			0.0			3617.6			3494.3	
28	Reference Time A		NA			0.0			NA			NA	
29	Adjusted Saturation B		0.0			0.0			3617.6			3494.3	
30	Reference Time B		0.0			0.0			NA			NA	
31	Reference Time Lefts	13.7			0.0			NA			NA		
32	Reference Time		13.7			0.0			NA			NA	
33	Adjusted Reference Time		17.7			8.0			NA			NA	
34	Split Timing												
35	Ref Time Combined		0.0			0.0			38.4			86.8	
36	Ref Time By Movement	5.7	0.0		0.0	0.0		29.9	38.4		0.0	86.8	
37	Reference Time		5.7			0.0			38.4			86.8	
38	Adjusted Reference Time	9.7	9.7		0.0	0.0		42.4	42.4		90.8	90.8	
39	Summary	East West	North South										
40	Protected Option	9.7	124.7										
41	Permitted Option	17.7	NA										
42	Split Option	9.7	133.2										
43	Minimum	9.7	124.7										
44	Combined	134.5											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	0.0	0.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	42.4	90.8	0.0	0.0								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	0.0	9.7	0.0	33.9								
51	Combined	50.4	100.5	0.0	41.9								
52	Intersection Capacity Utilization	96.0%											
53	Level Of Service	E											

Revision 00.4

# Intersection Capacity Utilization Worksheet

27 2

Intersection Location: Muldoon & Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	0	1	0	0	0	1	2	0	0	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	151	0	85	0	0	0	340	1132	0	0	1965	527								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	110																			
13	Adjusted Volume	168.3	0.0	94.4	0.0	0.0	0.0	378.2	1257.8	0.0	0.0	2183.3	585.4								
14	Volume Combined	168.3	0.0	94.4	0.0	0.0	0.0	378.2	1257.8	0.0	0.0	2768.6	0.0								
15	Volume Separate Left	168.3	0.0		0.0	0.0		378.2	1257.8		0.0	2768.6									
16	Lane Utilization Factor	0.971	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.968	0.850								
18	Saturated Flow Combined	3505.3	0.0	1615.0	0.0	0.0	0.0	1805.0	3617.6	0.0	0.0	3502.9	0.0								
19	Saturated Flow Separate	3505.3	0.0		0.0	0.0		1805.0	3617.6		0.0	3502.9									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	6.7	0.0	8.2	0.0	0.0	0.0	29.3	48.7	0.0	0.0	110.7	0.0								
25	Adjusted Reference Time	10.7	0.0	12.2	0.0	0.0	0.0	33.3	52.7	0.0	0.0	114.7	8.0								
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE									
27	Adjusted Saturation A		0.0			0.0			3617.6			3502.9									
28	Reference Time A		NA			0.0			NA			NA									
29	Adjusted Saturation B		0.0			0.0			3617.6			3502.9									
30	Reference Time B		0.0			0.0			NA			NA									
31	Reference Time Lefts	14.7			0.0			NA			NA										
32	Reference Time		14.7			0.0			NA			NA									
33	Adjusted Reference Time		18.7			8.0			NA			NA									
34	Split Timing																				
35	Ref Time Combined		0.0			0.0			48.7			110.7									
36	Ref Time By Movement	6.7	0.0		0.0	0.0		29.3	48.7		0.0	110.7									
37	Reference Time		6.7			0.0			48.7			110.7									
38	Adjusted Reference Time	10.7	10.7		0.0	0.0		52.7	52.7		114.7	114.7									
	Summary	East West		North South																	
39	Protected Option	10.7		148.0																	
40	Permitted Option	18.7		NA																	
41	Split Option	10.7		167.3																	
42	Minimum	10.7		148.0																	
43	Combined	158.7																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	12.2	0.0	0.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	52.7	114.7	0.0	0.0																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	0.0	10.7	0.0	33.3																
49	Combined	64.9	125.4	0.0	41.3																
50	Intersection Capacity Utilization	113.4%																			
51	Level Of Service	G																			

Revision 00.4



# Intersection Capacity Utilization Worksheet

28 2

Intersection Location: Muldoon & 36th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	335	13	413	10	2	7	39	1612	36	14	673	17
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	110											
13	Adjusted Volume	372.6	14.4	459.2	10.6	2.2	7.4	43.8	1791.3	39.8	15.8	747.3	19.0
14	Volume Combined	372.6	473.7	0.0	10.6	9.6	0.0	43.8	1831.1	0.0	15.8	766.2	0.0
15	Volume Separate Left	372.6	473.7		10.6	9.6		43.8	1831.1		15.8	766.2	
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.855	0.850	0.950	0.885	0.850	0.950	0.997	0.850	0.950	0.996	0.850
18	Saturated Flow Combined	1805.0	1623.7	0.0	1805.0	1681.5	0.0	1805.0	3605.8	0.0	1805.0	3604.2	0.0
19	Saturated Flow Separate	1805.0	1623.7		1805.0	1681.5		1805.0	3605.8		1805.0	3604.2	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	28.9	40.8	0.0	0.8	0.8	0.0	3.4	71.1	0.0	1.2	29.8	0.0
25	Adjusted Reference Time	32.9	44.8	8.0	8.0	8.0	8.0	8.0	75.1	8.0	8.0	33.8	8.0
26	Permitted Option Allowed		TRUE			TRUE			TRUE			TRUE	
27	Adjusted Saturation A		1623.7			1681.5			3605.8			3604.2	
28	Reference Time A		NA			0.8			71.1			29.8	
29	Adjusted Saturation B		1623.7			1681.5			3605.8			3604.2	
30	Reference Time B		40.8			NA			NA			NA	
31	Reference Time Lefts	36.9			NA			NA			NA		
32	Reference Time		40.8			0.8			71.1			29.8	
33	Adjusted Reference Time		44.8			8.0			75.1			33.8	
34	Split Timing												
35	Ref Time Combined		40.8			0.8			71.1			29.8	
36	Ref Time By Movement	28.9	40.8		0.8	0.8		3.4	71.1		1.2	29.8	
37	Reference Time		40.8			0.8			71.1			29.8	
38	Adjusted Reference Time	44.8	44.8		8.0	8.0		75.1	75.1		33.8	33.8	
	Summary	East West		North South									
39	Protected Option	52.8		83.1									
40	Permitted Option	44.8		75.1									
41	Split Option	52.8		108.9									
42	Minimum	44.8		75.1									
43	Combined	119.9											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	8.0	8.0	8.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	75.1	33.8	8.0	44.8								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	8.0	32.9	8.0	8.0								
49	Combined	91.1	74.7	24.0	60.8								
50	Intersection Capacity Utilization	85.7%											
51	Level Of Service	D											

Revision 00.4

# Intersection Capacity Utilization Worksheet

29 2

Intersection Location: Muldoon &amp; 20th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	32	0	23	529	5	185	6	899	27	16	1499	9
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	110											
13	Adjusted Volume	35.2	0.0	25.1	587.8	5.0	206.0	6.2	998.9	29.6	17.6	1665.1	9.6
14	Volume Combined	35.2	25.1	0.0	587.8	211.0	0.0	6.2	1028.4	0.0	17.6	1674.7	0.0
15	Volume Separate Left	35.2	25.1		587.8	211.0		6.2	1028.4		17.6	1674.7	
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.850	0.850	0.950	0.854	0.850	0.950	0.996	0.850	0.950	0.999	0.850
18	Saturated Flow Combined	1805.0	1615.0	0.0	1805.0	1621.8	0.0	1805.0	3602.0	0.0	1805.0	3614.5	0.0
19	Saturated Flow Separate	1805.0	1615.0		1805.0	1621.8		1805.0	3602.0		1805.0	3614.5	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	2.7	2.2	0.0	45.6	18.2	0.0	0.5	40.0	0.0	1.4	64.9	0.0
25	Adjusted Reference Time	8.0	0.0	8.0	49.6	22.2	8.0	8.0	44.0	8.0	8.0	68.9	8.0
26	Permitted Option Allowed		TRUE			TRUE			TRUE			TRUE	
27	Adjusted Saturation A		1615.0			1621.8			3602.0			3614.5	
28	Reference Time A		2.2			NA			40.0			64.9	
29	Adjusted Saturation B		1615.0			1621.8			3602.0			3614.5	
30	Reference Time B		NA			18.2			NA			NA	
31	Reference Time Lefts	NA			53.6			NA			NA		
32	Reference Time		2.2			53.6			40.0			64.9	
33	Adjusted Reference Time		8.0			57.6			44.0			68.9	
34	Split Timing												
35	Ref Time Combined		2.2			18.2			40.0			64.9	
36	Ref Time By Movement	2.7	2.2		45.6	18.2		0.5	40.0		1.4	64.9	
37	Reference Time		2.7			45.6			40.0			64.9	
38	Adjusted Reference Time	8.0	8.0		49.6	49.6		44.0	44.0		68.9	68.9	
39	Summary	East West		North South									
40	Protected Option	49.6		76.9									
41	Permitted Option	57.6		68.9									
42	Split Option	57.6		112.8									
43	Minimum	49.6		68.9									
44	Combined	118.5											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	44.0	68.9	22.2	0.0								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	49.6	8.0	8.0	8.0								
51	Combined	101.6	84.9	38.2	16.0								
52	Intersection Capacity Utilization	84.6%											
53	Level Of Service	D											

Revision 00.4

# Intersection Capacity Utilization Worksheet

30 2

Intersection Location: Bragaw & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	204	1533	102	97	2195	193	7	15	23	194	141	176								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	226.7	1703.4	113.3	107.8	2439.0	214.1	8.2	16.5	25.3	215.1	156.5	195.6								
14	Volume Combined	226.7	1816.8	0.0	107.8	2653.1	0.0	8.2	41.8	0.0	215.1	352.0	0.0								
15	Volume Separate Left	226.7	1816.8		107.8	2653.1		8.2	41.8		215.1	352.0									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	0.991	0.850	0.950	0.988	0.850	0.950	0.909	0.850	0.950	0.917	0.850								
18	Saturated Flow Combined	1805.0	3583.7	0.0	1805.0	3573.8	0.0	1805.0	3289.0	0.0	1805.0	3316.1	0.0								
19	Saturated Flow Separate	1805.0	3583.7		1805.0	3573.8		1805.0	3289.0		1805.0	3316.1									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	17.6	71.0	0.0	8.4	103.9	0.0	0.6	1.8	0.0	16.7	14.9	0.0								
25	Adjusted Reference Time	21.6	75.0	8.0	12.4	107.9	8.0	8.0	8.0	8.0	20.7	18.9	8.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3583.7			3573.8			3289.0			3316.1									
28	Reference Time A		NA			NA			1.8			NA									
29	Adjusted Saturation B		3583.7			3573.8			3289.0			3316.1									
30	Reference Time B		NA			NA			NA			14.9									
31	Reference Time Lefts	NA			NA			NA			24.7										
32	Reference Time		NA			NA			1.8			24.7									
33	Adjusted Reference Time		NA			NA			8.0			28.7									
34	Split Timing																				
35	Ref Time Combined		71.0			103.9			1.8			14.9									
36	Ref Time By Movement	17.6	71.0		8.4	103.9		0.6	1.8		16.7	14.9									
37	Reference Time		71.0			103.9			1.8			16.7									
38	Adjusted Reference Time	75.0	75.0		107.9	107.9		8.0	8.0		20.7	20.7									
	Summary	East West		North South																	
39	Protected Option	129.5		28.7																	
40	Permitted Option	NA		28.7																	
41	Split Option	182.9		28.7																	
42	Minimum	129.5		28.7																	
43	Combined	158.2																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	8.0	8.0	8.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	8.0	18.9	107.9	75.0																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	12.4	21.6	20.7	8.0																
49	Combined	28.4	48.4	136.6	91.0																
50	Intersection Capacity Utilization	113.0%																			
51	Level Of Service	G																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

31 2

Intersection Location: Bragaw &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	2	0	0	2	1	0	0	0	2	0	2
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	897	719	0	0	2080	286	0	0	0	296	0	1589
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	996.1	799.4	0.0	0.0	2311.6	317.3	0.0	0.0	0.0	329.3	0.0	1765.2
14	Volume Combined	996.1	799.4	0.0	0.0	2311.6	317.3	0.0	0.0	0.0	329.3	0.0	1765.2
15	Volume Separate Left	996.1	799.4		0.0	2311.6		0.0	0.0		329.3	0.0	
16	Lane Utilization Factor	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	0.971	1.000	0.885
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	3505.3	3617.6	0.0	0.0	3617.6	1615.0	0.0	0.0	0.0	3505.3	0.0	2858.6
19	Saturated Flow Separate	3505.3	3617.6		0.0	3617.6		0.0	0.0		3505.3	0.0	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	39.8	30.9	0.0	0.0	89.5	27.5	0.0	0.0	0.0	13.2	0.0	86.5
25	Adjusted Reference Time	43.8	34.9	0.0	0.0	93.5	31.5	0.0	0.0	0.0	17.2	0.0	90.5
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE	
27	Adjusted Saturation A		3617.6			3617.6			0.0			0.0	
28	Reference Time A		NA			NA			0.0			NA	
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0	
30	Reference Time B		NA			NA			0.0			0.0	
31	Reference Time Lefts	NA			NA			0.0			21.2		
32	Reference Time		NA			NA			0.0			21.2	
33	Adjusted Reference Time		NA			NA			8.0			25.2	
34	Split Timing												
35	Ref Time Combined		30.9			89.5			0.0			0.0	
36	Ref Time By Movement	39.8	30.9		0.0	89.5		0.0	0.0		13.2	0.0	
37	Reference Time		39.8			89.5			0.0			13.2	
38	Adjusted Reference Time	43.8	43.8		93.5	93.5		0.0	0.0		17.2	17.2	
	Summary	East West		North South									
39	Protected Option	137.2		17.2									
40	Permitted Option	NA		25.2									
41	Split Option	137.2		17.2									
42	Minimum	137.2		17.2									
43	Combined	154.4											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	0.0	31.5	0.0	90.5								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	0.0	0.0	93.5	34.9								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	0.0	43.8	17.2	0.0								
49	Combined	0.0	75.3	110.6	125.4								
50	Intersection Capacity Utilization	110.3%											
51	Level Of Service	G											

Revision 00.4

# Intersection Capacity Utilization Worksheet

32 2

Intersection Location: Bragaw &amp; Glenn Highway













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	2	2	1	1	2	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	20	308	20	670	3388	115	138	404	162	35	204	38
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input checked="" type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	22.1	342.3	22.1	744.9	3764.6	128.2	152.9	449.0	180.2	38.9	226.5	42.3
14	Volume Combined	22.1	342.3	22.1	744.9	3764.6	128.2	152.9	449.0	180.2	38.9	268.9	0.0
15	Volume Separate Left	22.1	342.3		744.9	3764.6		152.9	449.0		38.9	268.9	
16	Lane Utilization Factor	1.000	0.952	1.000	0.971	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.976	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	3505.3	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3532.2	0.0
19	Saturated Flow Separate	1805.0	3617.6		3505.3	3617.6		1805.0	3617.6		1805.0	3532.2	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	1.7	13.2	1.9	29.8	145.7	11.1	11.9	17.4	15.6	3.0	10.7	0.0
25	Adjusted Reference Time	8.0	17.2	8.0	33.8	149.7	15.1	15.9	21.4	19.6	8.0	14.7	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3532.2	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3532.2	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		13.2			145.7			17.4			10.7	
36	Ref Time By Movement	1.7	13.2		29.8	145.7		11.9	17.4		3.0	10.7	
37	Reference Time		13.2			145.7			17.4			10.7	
38	Adjusted Reference Time	17.2	17.2		149.7	149.7		21.4	21.4		14.7	14.7	
39	Summary	East West		North South									
40	Protected Option	157.7		30.5									
41	Permitted Option	NA		NA									
42	Split Option	166.9		36.0									
43	Minimum	157.7		30.5									
44	Combined	188.2											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	15.1	19.6	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	21.4	14.7	149.7	17.2								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	33.8	8.0	8.0	15.9								
51	Combined	8.0	15.1	177.3	41.1								
52	Intersection Capacity Utilization	134.4%											
53	Level Of Service	H											

Revision 00.4

# Intersection Capacity Utilization Worksheet

33 2

Intersection Location: Bragaw &amp; Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	1
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	114	365	190	297	1684	181	229	400	167	61	589	179
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	126.5	405.8	211.4	330.3	1870.8	200.9	254.6	444.8	185.2	68.0	654.9	198.9
14	Volume Combined	126.5	405.8	211.4	330.3	1870.8	200.9	254.6	444.8	185.2	68.0	654.9	198.9
15	Volume Separate Left	126.5	405.8		330.3	1870.8		254.6	444.8		68.0	654.9	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3617.6	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	9.8	15.7	18.3	25.6	72.4	17.4	19.7	17.2	16.1	5.3	25.3	17.2
25	Adjusted Reference Time	13.8	19.7	22.3	29.6	76.4	21.4	23.7	21.2	20.1	9.3	29.3	21.2
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3617.6	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3617.6	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		15.7			72.4			17.2			25.3	
36	Ref Time By Movement	9.8	15.7		25.6	72.4		19.7	17.2		5.3	25.3	
37	Reference Time		15.7			72.4			19.7			25.3	
38	Adjusted Reference Time	19.7	19.7		76.4	76.4		23.7	23.7		29.3	29.3	
39	Summary	East West	North South										
40	Protected Option	90.2	53.1										
41	Permitted Option	NA	NA										
42	Split Option	96.1	53.1										
43	Minimum	90.2	53.1										
44	Combined	143.3											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	22.3	21.4	20.1	21.2								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	21.2	29.3	76.4	19.7								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	29.6	13.8	9.3	23.7								
51	Combined	73.2	64.6	105.7	64.7								
52	Intersection Capacity Utilization	102.4%											
53	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

34 2

Intersection Location: Bragaw &amp; Penland













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	550	268	761	49	61	14	136	523	10	7	880	182
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	120											
13	Adjusted Volume	610.9	297.6	845.8	54.9	67.3	15.2	150.8	580.6	11.2	8.1	978.0	202.1
14	Volume Combined	610.9	1143.4	0.0	54.9	82.4	0.0	150.8	591.8	0.0	8.1	1180.0	0.0
15	Volume Separate Left	610.9	1143.4		54.9	82.4		150.8	591.8		8.1	1180.0	
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.889	0.850	0.950	0.972	0.850	0.950	0.997	0.850	0.950	0.974	0.850
18	Saturated Flow Combined	1805.0	1689.2	0.0	1805.0	1847.6	0.0	1805.0	3607.3	0.0	1805.0	3524.7	0.0
19	Saturated Flow Separate	1805.0	1689.2		1805.0	1847.6		1805.0	3607.3		1805.0	3524.7	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	47.4	94.8	0.0	4.3	6.2	0.0	11.7	23.0	0.0	0.6	46.9	0.0
25	Adjusted Reference Time	51.4	98.8	8.0	8.3	10.2	8.0	15.7	27.0	8.0	8.0	50.9	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		1689.2			1847.6			3607.3			3524.7	
28	Reference Time A		NA			6.2			NA			NA	
29	Adjusted Saturation B		1689.2			1847.6			3607.3			3524.7	
30	Reference Time B		94.8			NA			NA			NA	
31	Reference Time Lefts	55.4			NA			NA			NA		
32	Reference Time		94.8			6.2			NA			NA	
33	Adjusted Reference Time		98.8			10.2			NA			NA	
34	Split Timing												
35	Ref Time Combined		94.8			6.2			23.0			46.9	
36	Ref Time By Movement	47.4	94.8		4.3	6.2		11.7	23.0		0.6	46.9	
37	Reference Time		94.8			6.2			23.0			46.9	
38	Adjusted Reference Time	98.8	98.8		10.2	10.2		27.0	27.0		50.9	50.9	
39	Summary	East West	North South										
40	Protected Option	107.0	66.6										
41	Permitted Option	98.8	NA										
42	Split Option	109.0	77.8										
43	Minimum	98.8	66.6										
44	Combined	165.3											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	27.0	50.9	10.2	98.8								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	8.3	51.4	8.0	15.7								
51	Combined	43.2	110.3	26.2	122.5								
52	Intersection Capacity Utilization	118.1%											
53	Level Of Service	G											

Revision 00.4

# Intersection Capacity Utilization Worksheet

35 2

Intersection Location: Boniface &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	2	0	1	2	0	1	1	0	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	509	920	94	4	2337	42	19	19	0	45	57	612								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	565.4	1022.6	104.5	3.9	2597.2	47.0	21.3	21.3	0.0	49.6	63.7	679.5								
14	Volume Combined	565.4	1127.1	0.0	3.9	2644.1	0.0	21.3	21.3	0.0	49.6	743.3	0.0								
15	Volume Separate Left	565.4	1127.1		3.9	2644.1		21.3	21.3		49.6	743.3									
16	Lane Utilization Factor	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	0.986	0.850	0.950	0.997	0.850	0.950	1.000	0.850	0.950	0.863	0.850								
18	Saturated Flow Combined	3505.3	3567.3	0.0	1805.0	3608.0	0.0	1805.0	1900.0	0.0	1805.0	3121.5	0.0								
19	Saturated Flow Separate	3505.3	3567.3		1805.0	3608.0		1805.0	1900.0		1805.0	3121.5									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	22.6	44.2	0.0	0.3	102.6	0.0	1.7	1.6	0.0	3.8	33.3	0.0								
25	Adjusted Reference Time	26.6	48.2	8.0	8.0	106.6	8.0	8.0	8.0	0.0	8.0	37.3	8.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3567.3			3608.0			1900.0			3121.5									
28	Reference Time A		NA			NA			1.6			33.3									
29	Adjusted Saturation B		3567.3			3608.0			1900.0			3121.5									
30	Reference Time B		NA			NA			NA			33.3									
31	Reference Time Lefts	NA			NA			NA			11.8										
32	Reference Time		NA			NA			1.6			33.3									
33	Adjusted Reference Time		NA			NA			8.0			37.3									
34	Split Timing																				
35	Ref Time Combined		44.2			102.6			1.6			33.3									
36	Ref Time By Movement	22.6	44.2		0.3	102.6		1.7	1.6		3.8	33.3									
37	Reference Time		44.2			102.6			1.7			33.3									
38	Adjusted Reference Time	48.2	48.2		106.6	106.6		8.0	8.0		37.3	37.3									
	Summary	East West		North South																	
39	Protected Option	133.2		45.3																	
40	Permitted Option	NA		37.3																	
41	Split Option	154.8		45.3																	
42	Minimum	133.2		37.3																	
43	Combined	170.5																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	8.0	8.0	0.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	8.0	37.3	106.6	48.2																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	26.6	8.0	8.0																
49	Combined	24.0	71.9	114.6	64.2																
50	Intersection Capacity Utilization	121.8%																			
51	Level Of Service	H																			

Revision 00.4



# Intersection Capacity Utilization Worksheet

36 2

Intersection Location: Boniface &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	190	250	79	166	1107	259	321	400	144	214	507	179
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	210.8	277.3	88.3	183.9	1229.5	288.1	356.7	445.0	160.0	238.0	563.4	198.8
14	Volume Combined	210.8	365.6	0.0	183.9	1517.6	0.0	356.7	605.0	0.0	238.0	762.3	0.0
15	Volume Separate Left	210.8	365.6		183.9	1517.6		356.7	605.0		238.0	762.3	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.964	0.850	0.950	0.972	0.850	0.950	0.960	0.850	0.950	0.961	0.850
18	Saturated Flow Combined	1805.0	3486.6	0.0	1805.0	3514.6	0.0	1805.0	3474.1	0.0	1805.0	3476.0	0.0
19	Saturated Flow Separate	1805.0	3486.6		1805.0	3514.6		1805.0	3474.1		1805.0	3476.0	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	16.4	14.7	0.0	14.3	60.5	0.0	27.7	24.4	0.0	18.5	30.7	0.0
25	Adjusted Reference Time	20.4	18.7	8.0	18.3	64.5	8.0	31.7	28.4	8.0	22.5	34.7	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3486.6			3514.6			3474.1			3476.0	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3486.6			3514.6			3474.1			3476.0	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		14.7			60.5			24.4			30.7	
36	Ref Time By Movement	16.4	14.7		14.3	60.5		27.7	24.4		18.5	30.7	
37	Reference Time		16.4			60.5			27.7			30.7	
38	Adjusted Reference Time	20.4	20.4		64.5	64.5		31.7	31.7		34.7	34.7	
	Summary	East West		North South									
39	Protected Option	84.8		66.4									
40	Permitted Option	NA		NA									
41	Split Option	84.8		66.4									
42	Minimum	84.8		66.4									
43	Combined	151.2											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	8.0	8.0	8.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	28.4	34.7	64.5	18.7								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	18.3	20.4	22.5	31.7								
49	Combined	54.6	63.1	94.9	58.3								
50	Intersection Capacity Utilization	108.0%											
51	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

39 2

Intersection Location: Boniface &amp; Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	74	319	109	214	1616	197	280	725	94	107	637	214
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	82.2	353.9	121.7	237.8	1795.5	219.1	310.9	806.0	104.1	119.0	707.6	237.9
14	Volume Combined	82.2	475.6	0.0	237.8	2014.6	0.0	310.9	910.1	0.0	119.0	945.5	0.0
15	Volume Separate Left	82.2	475.6		237.8	2014.6		310.9	910.1		119.0	945.5	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.962	0.850	0.950	0.984	0.850	0.950	0.983	0.850	0.950	0.962	0.850
18	Saturated Flow Combined	1805.0	3478.8	0.0	1805.0	3558.6	0.0	1805.0	3555.5	0.0	1805.0	3481.1	0.0
19	Saturated Flow Separate	1805.0	3478.8		1805.0	3558.6		1805.0	3555.5		1805.0	3481.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	6.4	19.1	0.0	18.4	79.3	0.0	24.1	35.8	0.0	9.2	38.0	0.0
25	Adjusted Reference Time	10.4	23.1	8.0	22.4	83.3	8.0	28.1	39.8	8.0	13.2	42.0	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3478.8			3558.6			3555.5			3481.1	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3478.8			3558.6			3555.5			3481.1	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		19.1			79.3			35.8			38.0	
36	Ref Time By Movement	6.4	19.1		18.4	79.3		24.1	35.8		9.2	38.0	
37	Reference Time		19.1			79.3			35.8			38.0	
38	Adjusted Reference Time	23.1	23.1		83.3	83.3		39.8	39.8		42.0	42.0	
39	Summary	East West		North South									
40	Protected Option	93.6		70.1									
41	Permitted Option	NA		NA									
42	Split Option	106.4		81.9									
43	Minimum	93.6		70.1									
44	Combined	163.8											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	39.8	42.0	83.3	23.1								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	22.4	10.4	13.2	28.1								
51	Combined	70.3	60.4	104.5	59.3								
50	Intersection Capacity Utilization	117.0%											
51	Level Of Service	G											

Revision 00.4

# Intersection Capacity Utilization Worksheet

41 2

Intersection Location: Patterson &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 AM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	1	2	0	1	1	0	1	1	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	27	265	99	20	524	11	213	6	48	47	142	820								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	70																			
13	Adjusted Volume	30.2	294.9	110.4	21.9	582.5	12.0	237.0	7.2	53.4	52.5	157.4	911.6								
14	Volume Combined	30.2	405.2	0.0	21.9	594.5	0.0	237.0	60.5	0.0	52.5	1069.1	0.0								
15	Volume Separate Left	30.2	405.2		21.9	594.5		237.0	60.5		52.5	1069.1									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	0.959	0.850	0.950	0.997	0.850	0.950	0.868	0.850	0.950	0.872	0.850								
18	Saturated Flow Combined	1805.0	3469.8	0.0	1805.0	3606.7	0.0	1805.0	1648.8	0.0	1805.0	1657.0	0.0								
19	Saturated Flow Separate	1805.0	3469.8		1805.0	3606.7		1805.0	1648.8		1805.0	1657.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	2.3	16.4	0.0	1.7	23.1	0.0	18.4	5.1	0.0	4.1	90.3	0.0								
25	Adjusted Reference Time	8.0	20.4	8.0	8.0	27.1	8.0	22.4	9.1	8.0	8.1	94.3	8.0								
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE									
27	Adjusted Saturation A		3469.8			3606.7			1648.8			1657.0									
28	Reference Time A		16.4			23.1			NA			NA									
29	Adjusted Saturation B		3469.8			3606.7			1648.8			1657.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		16.4			23.1			NA			NA									
33	Adjusted Reference Time		20.4			27.1			NA			NA									
34	Split Timing																				
35	Ref Time Combined		16.4			23.1			5.1			90.3									
36	Ref Time By Movement	2.3	16.4		1.7	23.1		18.4	5.1		4.1	90.3									
37	Reference Time		16.4			23.1			18.4			90.3									
38	Adjusted Reference Time	20.4	20.4		27.1	27.1		22.4	22.4		94.3	94.3									
	Summary	East West		North South																	
39	Protected Option	35.1		116.7																	
40	Permitted Option	27.1		NA																	
41	Split Option	47.4		116.7																	
42	Minimum	27.1		116.7																	
43	Combined	143.8																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	8.0	8.0	8.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	9.1	94.3	27.1	20.4																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	8.0	8.1	22.4																
49	Combined	25.1	110.3	43.1	50.7																
50	Intersection Capacity Utilization	102.7%																			
51	Level Of Service	F																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

2 2

Intersection Location: Lake Otis & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	1	2	2	0	1	3	1	1	2	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	345	1600	316	1160	2345	71	240	3512	1351	185	1069	388								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	383.0	1777.3	351.4	1289.1	2605.5	78.4	266.4	3902.3	1500.7	206.1	1188.0	430.6								
14	Volume Combined	383.0	1777.3	351.4	1289.1	2683.9	0.0	0.0	4168.7	1500.7	206.1	1188.0	430.6								
15	Volume Separate Left	383.0	1777.3		1289.1	2683.9		266.4	3902.3		206.1	1188.0									
16	Lane Utilization Factor	1.000	0.952	1.000	0.971	0.952	1.000	1.000	0.908	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	0.996	0.850	0.950	0.997	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3617.6	1615.0	3505.3	3601.7	0.0	0.0	6878.7	1615.0	1805.0	3617.6	1615.0								
19	Saturated Flow Separate	1805.0	3617.6		3505.3	3601.7		3610.0	5175.6		1805.0	3617.6									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	29.7	68.8	30.5	51.5	104.3	0.0	NA	NA	130.1	NA	NA	37.3								
25	Adjusted Reference Time	33.7	72.8	34.5	55.5	108.3	8.0	NA	NA	134.1	NA	NA	41.3								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3601.7			-2484.7			3617.6									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3601.7			3450.4			3617.6									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		68.8			104.3			84.8			46.0									
36	Ref Time By Movement	29.7	68.8		51.5	104.3		10.3	105.6		16.0	46.0									
37	Reference Time		68.8			104.3			105.6			46.0									
38	Adjusted Reference Time	72.8	72.8		108.3	108.3		109.6	109.6		50.0	50.0									
39	Summary	East West		North South																	
40	Protected Option	142.0		NA																	
41	Permitted Option	NA		NA																	
42	Split Option	181.1		159.5																	
43	Minimum	142.0		159.5																	
44	Combined	301.6																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	34.5	8.0	134.1	41.3																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	109.6	50.0	108.3	72.8																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	55.5	33.7	50.0	109.6																
51	Combined	199.5	91.7	292.4	223.7																
50	Intersection Capacity Utilization	215.4%																			
51	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

3 2

Intersection Location: Lake Otis & Dowling













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	2	1	2	2	1	2	2	1	2	2	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	838	280	856	77	181	63	287	1644	76	229	2138	255								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	931.3	311.1	951.5	85.1	201.5	69.5	318.8	1826.6	84.5	253.9	2375.8	283.4								
14	Volume Combined	931.3	311.1	951.5	85.1	201.5	69.5	318.8	1826.6	84.5	253.9	2375.8	283.4								
15	Volume Separate Left	931.3	311.1		85.1	201.5		318.8	1826.6		253.9	2375.8									
16	Lane Utilization Factor	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0								
19	Saturated Flow Separate	3505.3	3617.6		3505.3	3617.6		3505.3	3617.6		3505.3	3617.6									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	37.2	12.0	82.5	3.4	7.8	6.0	12.7	70.7	7.3	10.1	91.9	24.6								
25	Adjusted Reference Time	41.2	16.0	86.5	8.0	11.8	10.0	16.7	74.7	11.3	14.1	95.9	28.6								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3617.6									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3617.6									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		12.0			7.8			70.7			91.9									
36	Ref Time By Movement	37.2	12.0		3.4	7.8		12.7	70.7		10.1	91.9									
37	Reference Time		37.2			7.8			70.7			91.9									
38	Adjusted Reference Time	41.2	41.2		11.8	11.8		74.7	74.7		95.9	95.9									
	Summary	East West		North South																	
39	Protected Option	53.0		112.7																	
40	Permitted Option	NA		NA																	
41	Split Option	53.0		170.6																	
42	Minimum	53.0		112.7																	
43	Combined	165.7																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	86.5	10.0	11.3	28.6																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	74.7	95.9	11.8	16.0																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	41.2	14.1	16.7																
49	Combined	169.2	147.2	37.3	61.3																
50	Intersection Capacity Utilization	120.8%																			
51	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

4 2

Intersection Location: Lake Otis & O'Malley













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement	 EBL	 EBT	 EBR	 WBL	 WBT	 WBR	 NBL	 NBT	 NBR	 SBL	 SBT	 SBR								
2	Lanes	1	1	1	1	1	1	1	2	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	312	477	286	38	294	112	90	274	101	202	174	505								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	347.1	530.1	317.8	42.1	326.2	124.0	100.5	304.4	112.5	224.5	193.3	561.2								
14	Volume Combined	347.1	530.1	317.8	42.1	326.2	124.0	100.5	416.9	0.0	224.5	193.3	561.2								
15	Volume Separate Left	347.1	530.1		42.1	326.2		100.5	416.9		224.5	193.3									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.960	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	3471.2	0.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1900.0		1805.0	3471.2		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	26.9	39.1	27.6	3.3	24.0	10.7	7.8	16.8	0.0	17.4	14.2	48.7								
25	Adjusted Reference Time	30.9	43.1	31.6	8.0	28.0	14.7	11.8	20.8	8.0	21.4	18.2	52.7								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		1900.0			1900.0			3471.2			1900.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		1900.0			1900.0			3471.2			1900.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		39.1			24.0			16.8			14.2									
36	Ref Time By Movement	26.9	39.1		3.3	24.0		7.8	16.8		17.4	14.2									
37	Reference Time		39.1			24.0			16.8			17.4									
38	Adjusted Reference Time	43.1	43.1		28.0	28.0		20.8	20.8		21.4	21.4									
39	Summary	East West		North South																	
40	Protected Option	59.0		42.2																	
41	Permitted Option	NA		NA																	
42	Split Option	71.1		42.2																	
43	Minimum	59.0		42.2																	
44	Combined	101.2																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	31.6	14.7	8.0	52.7																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	20.8	18.2	28.0	43.1																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	8.0	30.9	21.4	11.8																
51	Combined	60.4	63.9	57.4	107.5																
50	Intersection Capacity Utilization	76.8%																			
51	Level Of Service	C																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

5 2

Intersection Location: Lake Otis & Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	2	1	2	3	0	1	1	1	1	1	1
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	715	1908	344	423	1715	111	364	967	529	128	998	663
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	794.6	2119.7	382.8	470.0	1905.3	123.4	404.4	1074.9	587.6	142.2	1109.2	736.1
14	Volume Combined	794.6	2119.7	382.8	470.0	2028.7	0.0	404.4	1074.9	587.6	142.2	1109.2	736.1
15	Volume Separate Left	794.6	2119.7		470.0	2028.7		404.4	1074.9		142.2	1109.2	
16	Lane Utilization Factor	0.971	0.952	1.000	0.971	0.908	1.000	1.000	1.000	1.000	1.000	1.000	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	0.991	0.850	0.950	1.000	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	3505.3	3617.6	1615.0	3505.3	5128.4	0.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0
19	Saturated Flow Separate	3505.3	3617.6		3505.3	5128.4		1805.0	1900.0		1805.0	1900.0	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	31.7	82.0	33.2	18.8	55.4	0.0	31.4	79.2	50.9	11.0	81.7	63.8
25	Adjusted Reference Time	35.7	86.0	37.2	22.8	59.4	8.0	35.4	83.2	54.9	15.0	85.7	67.8
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			5128.4			1900.0			1900.0	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			5128.4			1900.0			1900.0	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		82.0			55.4			79.2			81.7	
36	Ref Time By Movement	31.7	82.0		18.8	55.4		31.4	79.2		11.0	81.7	
37	Reference Time		82.0			55.4			79.2			81.7	
38	Adjusted Reference Time	86.0	86.0		59.4	59.4		83.2	83.2		85.7	85.7	
39	Summary	East West	North South										
40	Protected Option	108.8	121.1										
41	Permitted Option	NA	NA										
42	Split Option	145.4	168.9										
43	Minimum	108.8	121.1										
44	Combined	229.9											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	37.2	8.0	54.9	67.8								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	83.2	85.7	59.4	86.0								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	22.8	35.7	15.0	35.4								
51	Combined	143.2	129.5	129.3	189.2								
50	Intersection Capacity Utilization	164.2%											
51	Level Of Service	H											

Revision 00.4

**Intersection 8:**  
See Roundabout Analysis



# Intersection Capacity Utilization Worksheet

9 2

Intersection Location: New Seward E Ramps & Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	0	2	1	1	1	1	0	0	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	209	1949	0	0	1822	267	0	368	560	0	0	0								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	232.1	2165.1	0.0	0.0	2024.2	297.1	0.0	408.7	621.7	0.0	0.0	0.0								
14	Volume Combined	232.1	2165.1	0.0	0.0	2024.2	297.1	0.0	408.7	621.7	0.0	0.0	0.0								
15	Volume Separate Left	232.1	2165.1		0.0	2024.2		0.0	408.7		0.0	0.0									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3617.6	0.0	0.0	3617.6	1615.0	0.0	3800.0	1615.0	0.0	0.0	0.0								
19	Saturated Flow Separate	1805.0	3617.6		0.0	3617.6		3610.0	1900.0		0.0	0.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	18.0	83.8	0.0	0.0	78.3	25.8	NA	NA	53.9	NA	NA	0.0								
25	Adjusted Reference Time	22.0	87.8	0.0	0.0	82.3	29.8	NA	NA	57.9	NA	NA	0.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			1900.0			0.0									
28	Reference Time A		NA			NA			30.1			0.0									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			23.1			NA									
31	Reference Time Lefts	NA			NA			0.0			NA										
32	Reference Time		NA			NA			23.1			0.0									
33	Adjusted Reference Time		NA			NA			27.1			8.0									
34	Split Timing																				
35	Ref Time Combined		83.8			78.3			15.1			0.0									
36	Ref Time By Movement	18.0	83.8		0.0	78.3		0.0	30.1		0.0	0.0									
37	Reference Time		83.8			78.3			30.1			0.0									
38	Adjusted Reference Time	87.8	87.8		82.3	82.3		34.1	34.1		0.0	0.0									
	Summary	East West		North South																	
39	Protected Option	104.3		NA																	
40	Permitted Option	NA		27.1																	
41	Split Option	170.1		34.1																	
42	Minimum	104.3		27.1																	
43	Combined	131.4																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	0.0	29.8	57.9	0.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	27.1	0.0	82.3	87.8																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	0.0	22.0	0.0	34.1																
49	Combined	27.1	51.8	140.2	121.9																
50	Intersection Capacity Utilization	100.2%																			
51	Level Of Service	F																			













Revision 00.4

# Intersection Capacity Utilization Worksheet

11 2

**Intersection Location:** New Seward E Ramps & O'Malley  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 PM  
**Project:** East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	0	2	1	1	1	1	0	0	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	534	1007	0	0	692	271	335	78	37	0	0	0
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	120											
13	Adjusted Volume	593.8	1118.9	0.0	0.0	769.3	300.9	372.4	86.5	41.6	0.0	0.0	0.0
14	Volume Combined	593.8	1118.9	0.0	0.0	769.3	300.9	0.0	458.9	41.6	0.0	0.0	0.0
15	Volume Separate Left	593.8	1118.9		0.0	769.3		372.4	86.5		0.0	0.0	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.959	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	1805.0	3617.6	0.0	0.0	3617.6	1615.0	0.0	3645.8	1615.0	0.0	0.0	0.0
19	Saturated Flow Separate	1805.0	3617.6		0.0	3617.6		3610.0	1900.0		0.0	0.0	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE	
24	Reference Time	46.1	43.3	0.0	0.0	29.8	26.1	NA	NA	3.6	NA	NA	0.0
25	Adjusted Reference Time	50.1	47.3	0.0	0.0	33.8	30.1	NA	NA	8.0	NA	NA	0.0
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE	
27	Adjusted Saturation A		3617.6			3617.6			-9892.8			0.0	
28	Reference Time A		NA			NA			NA			0.0	
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0	
30	Reference Time B		NA			NA			25.6			0.0	
31	Reference Time Lefts	NA			NA			22.4			0.0		
32	Reference Time		NA			NA			25.6			0.0	
33	Adjusted Reference Time		NA			NA			29.6			8.0	
34	Split Timing												
35	Ref Time Combined		43.3			29.8			17.6			0.0	
36	Ref Time By Movement	46.1	43.3		0.0	29.8		14.4	6.4		0.0	0.0	
37	Reference Time		46.1			29.8			17.6			0.0	
38	Adjusted Reference Time	50.1	50.1		33.8	33.8		21.6	21.6		0.0	0.0	
39	Summary	East West		North South									
40	Protected Option	83.8		NA									
41	Permitted Option	NA		29.6									
42	Split Option	83.8		21.6									
43	Minimum	83.8		21.6									
44	Combined	105.4											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	0.0	30.1	8.0	0.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	21.6	0.0	33.8	47.3								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	0.0	50.1	0.0	21.6								
51	Combined	21.6	30.1	41.8	68.9								
52	Intersection Capacity Utilization	75.3%											
53	Level Of Service	C											













Revision 00.4

# Intersection Capacity Utilization Worksheet

12 2

**Intersection Location:** New Seward W Ramps & Dimond  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 PM  
**Project:** East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	0	2	1	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes										
4	Volume	0	1306	250	37	985	0	0	0	0	0	1344	0								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	0.0	1450.8	277.4	41.2	1094.5	0.0	0.0	0.0	0.0	0.0	1492.9	0.0								
14	Volume Combined	0.0	1450.8	277.4	41.2	1094.5	0.0	0.0	0.0	0.0	0.0	1492.9	0.0								
15	Volume Separate Left	0.0	1450.8		41.2	1094.5		0.0	0.0		0.0	1492.9									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	0.0	3617.6	1615.0	1805.0	3617.6	0.0	0.0	0.0	0.0	0.0	3800.0	1615.0								
19	Saturated Flow Separate	0.0	3617.6		1805.0	3617.6		0.0	0.0		3610.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	0.0	56.1	24.0	3.2	42.4	0.0	NA	NA	0.0	NA	NA	0.0								
25	Adjusted Reference Time	0.0	60.1	28.0	8.0	46.4	0.0	NA	NA	0.0	NA	NA	0.0								
26	Permitted Option Allowed		TRUE			TRUE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			0.0			1900.0									
28	Reference Time A		56.1			42.4			0.0			110.0									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			NA			63.0									
31	Reference Time Lefts	NA			NA			NA			0.0										
32	Reference Time		56.1			42.4			0.0			63.0									
33	Adjusted Reference Time		60.1			46.4			8.0			67.0									
34	Split Timing																				
35	Ref Time Combined		56.1			42.4			0.0			55.0									
36	Ref Time By Movement	0.0	56.1		3.2	42.4		0.0	0.0		0.0	110.0									
37	Reference Time		56.1			42.4			0.0			110.0									
38	Adjusted Reference Time	60.1	60.1		46.4	46.4		0.0	0.0		114.0	114.0									
	<b>Summary</b>	<b>East West</b>		<b>North South</b>																	
39	Protected Option	68.1		NA																	
40	Permitted Option	60.1		67.0																	
41	Split Option	106.5		114.0																	
42	Minimum	60.1		67.0																	
43	Combined	127.1																			
	<b>Right Turns</b>	<b>EBR</b>	<b>WBR</b>	<b>NBR</b>	<b>SBR</b>																
44	Adjusted Reference Time	28.0	0.0	0.0	0.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	67.0	46.4	60.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	0.0	114.0	0.0																
49	Combined	36.0	67.0	160.4	60.1																
50	Intersection Capacity Utilization	114.5%																			
51	Level Of Service	G																			

Revision 00.4

**Intersection 13:**  
See Roundabout Analysis

# Intersection Capacity Utilization Worksheet

14 2

Intersection Location: New Seward W Ramps &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	0	2	1	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes										
4	Volume	0	2015	392	506	1853	0	0	0	0	0	246	191								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	0.0	2238.5	435.8	562.7	2058.8	0.0	0.0	0.0	0.0	0.0	273.8	212.7								
14	Volume Combined	0.0	2238.5	435.8	562.7	2058.8	0.0	0.0	0.0	0.0	0.0	273.8	212.7								
15	Volume Separate Left	0.0	2238.5		562.7	2058.8		0.0	0.0		0.0	273.8									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	0.0	3617.6	1615.0	1805.0	3617.6	0.0	0.0	0.0	0.0	0.0	3800.0	1615.0								
19	Saturated Flow Separate	0.0	3617.6		1805.0	3617.6		0.0	0.0		3610.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	0.0	86.6	37.8	43.6	79.7	0.0	NA	NA	0.0	NA	NA	18.4								
25	Adjusted Reference Time	0.0	90.6	41.8	47.6	83.7	0.0	NA	NA	0.0	NA	NA	22.4								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			0.0			1900.0									
28	Reference Time A		NA			NA			0.0			20.2									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			NA			18.1									
31	Reference Time Lefts	NA			NA			NA			0.0										
32	Reference Time		NA			NA			0.0			18.1									
33	Adjusted Reference Time		NA			NA			8.0			22.1									
34	Split Timing																				
35	Ref Time Combined		86.6			79.7			0.0			10.1									
36	Ref Time By Movement	0.0	86.6		43.6	79.7		0.0	0.0		0.0	20.2									
37	Reference Time		86.6			79.7			0.0			20.2									
38	Adjusted Reference Time	90.6	90.6		83.7	83.7		0.0	0.0		24.2	24.2									
	Summary	East West		North South																	
39	Protected Option	138.3		NA																	
40	Permitted Option	NA		22.1																	
41	Split Option	174.3		24.2																	
42	Minimum	138.3		22.1																	
43	Combined	160.4																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	41.8	0.0	0.0	22.4																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	22.1	83.7	90.6																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	47.6	0.0	24.2	0.0																
49	Combined	89.4	22.1	107.9	113.1																
50	Intersection Capacity Utilization	114.5%																			
51	Level Of Service	G																			













Revision 00.4

# Intersection Capacity Utilization Worksheet

16 2

**Intersection Location:** New Seward W Ramps & O'Malley  
**Analyzed by:** MKW  
**Date and Time of Data:**

**City:** Anchorage, AK  
**Alternative:** No-Build 2023 PM  
**Project:** East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	0	1	2	0	0	0	0	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	0	1394	509	63	683	0	0	0	0	496	253	398								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	0.0	1549.1	565.7	69.7	758.4	0.0	0.0	0.0	0.0	550.9	280.6	441.7								
14	Volume Combined	0.0	2114.8	0.0	69.7	758.4	0.0	0.0	0.0	0.0	550.9	280.6	441.7								
15	Volume Separate Left	0.0	2114.8		69.7	758.4		0.0	0.0		550.9	280.6									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	0.960	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	3472.5	0.0	1805.0	3617.6	0.0	0.0	0.0	0.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	3472.5		1805.0	3617.6		0.0	0.0		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	0.0	85.3	0.0	5.4	29.3	0.0	0.0	0.0	0.0	42.7	20.7	38.3								
25	Adjusted Reference Time	0.0	89.3	8.0	9.4	33.3	0.0	0.0	0.0	0.0	46.7	24.7	42.3								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3472.5			3617.6			0.0			1900.0									
28	Reference Time A		NA			NA			0.0			NA									
29	Adjusted Saturation B		3472.5			3617.6			0.0			1900.0									
30	Reference Time B		NA			NA			NA			20.7									
31	Reference Time Lefts	NA			NA			NA			50.7										
32	Reference Time		NA			NA			0.0			50.7									
33	Adjusted Reference Time		NA			NA			8.0			54.7									
34	Split Timing																				
35	Ref Time Combined		85.3			29.3			0.0			20.7									
36	Ref Time By Movement	0.0	85.3		5.4	29.3		0.0	0.0		42.7	20.7									
37	Reference Time		85.3			29.3			0.0			42.7									
38	Adjusted Reference Time	89.3	89.3		33.3	33.3		0.0	0.0		46.7	46.7									
	<b>Summary</b>	<b>East West</b>		<b>North South</b>																	
39	Protected Option	98.7		46.7																	
40	Permitted Option	NA		54.7																	
41	Split Option	122.6		46.7																	
42	Minimum	98.7		46.7																	
43	Combined	145.4																			
	<b>Right Turns</b>	<b>EBR</b>	<b>WBR</b>	<b>NBR</b>	<b>SBR</b>																
44	Adjusted Reference Time	8.0	0.0	0.0	42.3																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	24.7	33.3	89.3																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	9.4	0.0	46.7	0.0																
49	Combined	17.4	24.7	80.1	131.6																
50	Intersection Capacity Utilization	103.9%																			
51	Level Of Service	F																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

17 2

Intersection Location: Old Seward &amp; Dimond













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	3	1	2	2	1	2	2	1	2	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	137	1174	382	383	990	0	629	865	0	433	695	301
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	151.9	1304.4	425.0	425.7	1100.2	0.0	698.5	960.6	0.0	481.6	772.6	334.2
14	Volume Combined	151.9	1304.4	425.0	425.7	1100.2	0.0	698.5	960.6	0.0	481.6	1106.7	0.0
15	Volume Separate Left	151.9	1304.4		425.7	1100.2		698.5	960.6		481.6	1106.7	
16	Lane Utilization Factor	1.000	0.908	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.955	0.850
18	Saturated Flow Combined	1805.0	5175.6	1615.0	3505.3	3617.6	1615.0	3505.3	3617.6	1615.0	3505.3	3453.7	0.0
19	Saturated Flow Separate	1805.0	5175.6		3505.3	3617.6		3505.3	3617.6		3505.3	3453.7	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	11.8	35.3	36.8	17.0	42.6	0.0	27.9	37.2	0.0	19.2	44.9	0.0
25	Adjusted Reference Time	15.8	39.3	40.8	21.0	46.6	0.0	31.9	41.2	0.0	23.2	48.9	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		5175.6			3617.6			3617.6			3453.7	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		5175.6			3617.6			3617.6			3453.7	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		35.3			42.6			37.2			44.9	
36	Ref Time By Movement	11.8	35.3		17.0	42.6		27.9	37.2		19.2	44.9	
37	Reference Time		35.3			42.6			37.2			44.9	
38	Adjusted Reference Time	39.3	39.3		46.6	46.6		41.2	41.2		48.9	48.9	
39	Summary	East West	North South										
40	Protected Option	62.4	80.8										
41	Permitted Option	NA	NA										
42	Split Option	85.9	90.0										
43	Minimum	62.4	80.8										
44	Combined	143.1											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	40.8	0.0	0.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	41.2	48.9	46.6	39.3								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	21.0	15.8	23.2	31.9								
51	Combined	103.0	64.6	69.8	79.2								
52	Intersection Capacity Utilization	102.2%											
53	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

18 2

Intersection Location: Old Seward &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	106	1375	210	312	1346	265	268	572	712	371	630	169
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	117.5	1527.2	233.6	346.9	1496.0	294.0	297.4	635.2	790.6	411.8	700.1	187.8
14	Volume Combined	117.5	1527.2	233.6	346.9	1496.0	294.0	297.4	635.2	790.6	411.8	887.9	0.0
15	Volume Separate Left	117.5	1527.2		346.9	1496.0		297.4	635.2		411.8	887.9	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.968	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3502.8	0.0
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3502.8	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	9.1	59.1	20.3	26.9	57.9	25.5	23.1	24.6	68.5	31.9	35.5	0.0
25	Adjusted Reference Time	13.1	63.1	24.3	30.9	61.9	29.5	27.1	28.6	72.5	35.9	39.5	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3502.8	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3502.8	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		59.1			57.9			24.6			35.5	
36	Ref Time By Movement	9.1	59.1		26.9	57.9		23.1	24.6		31.9	35.5	
37	Reference Time		59.1			57.9			24.6			35.5	
38	Adjusted Reference Time	63.1	63.1		61.9	61.9		28.6	28.6		39.5	39.5	
	Summary	East West		North South									
39	Protected Option	94.0		66.6									
40	Permitted Option	NA		NA									
41	Split Option	125.0		68.1									
42	Minimum	94.0		66.6									
43	Combined	160.6											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	24.3	29.5	72.5	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	28.6	39.5	61.9	63.1								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	30.9	13.1	35.9	27.1								
49	Combined	83.7	82.1	170.4	98.2								
50	Intersection Capacity Utilization	121.7%											
51	Level Of Service	H											

Revision 00.4



# Intersection Capacity Utilization Worksheet

19 2

Intersection Location: Old Seward & Dowling













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	1	1	1	1	1	1	1	1	1	1								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	119	315	104	201	432	564	184	435	508	135	246	28								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	131.8	350.1	116.1	223.8	479.7	626.6	204.3	483.0	564.7	149.5	273.9	30.8								
14	Volume Combined	131.8	350.1	116.1	223.8	479.7	626.6	204.3	483.0	564.7	149.5	273.9	30.8								
15	Volume Separate Left	131.8	350.1		223.8	479.7		204.3	483.0		149.5	273.9									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0	1805.0	1900.0	1615.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1900.0		1805.0	1900.0		1805.0	1900.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	10.2	25.8	10.1	17.4	35.3	54.3	15.8	35.6	49.0	11.6	20.2	2.7								
25	Adjusted Reference Time	14.2	29.8	14.1	21.4	39.3	58.3	19.8	39.6	53.0	15.6	24.2	8.0								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		1900.0			1900.0			1900.0			1900.0									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		1900.0			1900.0			1900.0			1900.0									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		25.8			35.3			35.6			20.2									
36	Ref Time By Movement	10.2	25.8		17.4	35.3		15.8	35.6		11.6	20.2									
37	Reference Time		25.8			35.3			35.6			20.2									
38	Adjusted Reference Time	29.8	29.8		39.3	39.3		39.6	39.6		24.2	24.2									
	Summary	East West		North South																	
39	Protected Option	53.6		55.2																	
40	Permitted Option	NA		NA																	
41	Split Option	69.1		63.8																	
42	Minimum	53.6		55.2																	
43	Combined	108.8																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	14.1	58.3	53.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	39.6	24.2	39.3	29.8																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	21.4	14.2	15.6	19.8																
49	Combined	75.0	96.7	107.9	57.6																
50	Intersection Capacity Utilization	77.7%																			
51	Level Of Service	C																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

20 2

Intersection Location: Old Seward &amp; International













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	1	1	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	287	447	525	34	73	50	258	658	18	164	704	336
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	120											
13	Adjusted Volume	318.6	496.4	583.9	38.1	81.1	55.3	286.6	731.4	19.5	182.3	781.8	372.9
14	Volume Combined	318.6	1080.3	0.0	38.1	81.1	55.3	286.6	750.8	0.0	182.3	1154.7	0.0
15	Volume Separate Left	318.6	1080.3		38.1	81.1		286.6	750.8		182.3	1154.7	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.919	0.850	0.950	1.000	0.850	0.950	0.996	0.850	0.950	0.952	0.850
18	Saturated Flow Combined	1805.0	3324.3	0.0	1805.0	1900.0	1615.0	1805.0	3603.5	0.0	1805.0	3442.3	0.0
19	Saturated Flow Separate	1805.0	3324.3		1805.0	1900.0		1805.0	3603.5		1805.0	3442.3	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	24.7	45.5	0.0	3.0	6.0	4.8	22.2	29.2	0.0	14.1	47.0	0.0
25	Adjusted Reference Time	28.7	49.5	8.0	8.0	10.0	8.8	26.2	33.2	8.0	18.1	51.0	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		3324.3			1900.0			3603.5			3442.3	
28	Reference Time A		NA			6.0			NA			NA	
29	Adjusted Saturation B		3324.3			1900.0			3603.5			3442.3	
30	Reference Time B		45.5			NA			NA			NA	
31	Reference Time Lefts	32.7			NA			NA			NA		
32	Reference Time		45.5			6.0			NA			NA	
33	Adjusted Reference Time		49.5			10.0			NA			NA	
34	Split Timing												
35	Ref Time Combined		45.5			6.0			29.2			47.0	
36	Ref Time By Movement	24.7	45.5		3.0	6.0		22.2	29.2		14.1	47.0	
37	Reference Time		45.5			6.0			29.2			47.0	
38	Adjusted Reference Time	49.5	49.5		10.0	10.0		33.2	33.2		51.0	51.0	
39	Summary	East West		North South									
40	Protected Option	57.5		77.2									
41	Permitted Option	49.5		NA									
42	Split Option	59.5		84.1									
43	Minimum	49.5		77.2									
44	Combined	126.7											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.8	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	33.2	51.0	10.0	49.5								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	8.0	28.7	18.1	26.2								
51	Combined	49.2	88.5	36.1	83.7								
52	Intersection Capacity Utilization	90.5%											
53	Level Of Service	E											

Revision 00.4

# Intersection Capacity Utilization Worksheet

21 2

Intersection Location: Old Seward &amp; O'Malley













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	245	1315	462	274	678	379	202	211	317	363	375	147								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	130																			
13	Adjusted Volume	271.9	1461.5	513.2	304.5	753.2	421.5	224.8	234.2	351.9	403.5	416.6	163.9								
14	Volume Combined	271.9	1461.5	513.2	304.5	753.2	421.5	224.8	234.2	351.9	403.5	580.5	0.0								
15	Volume Separate Left	271.9	1461.5		304.5	753.2		224.8	234.2		403.5	580.5									
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.958	0.850								
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3464.4	0.0								
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3464.4									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	21.1	56.6	44.5	23.6	29.1	36.5	17.4	9.1	30.5	31.3	23.5	0.0								
25	Adjusted Reference Time	25.1	60.6	48.5	27.6	33.1	40.5	21.4	13.1	34.5	35.3	27.5	8.0								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3464.4									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3464.4									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		56.6			29.1			9.1			23.5									
36	Ref Time By Movement	21.1	56.6		23.6	29.1		17.4	9.1		31.3	23.5									
37	Reference Time		56.6			29.1			17.4			31.3									
38	Adjusted Reference Time	60.6	60.6		33.1	33.1		21.4	21.4		35.3	35.3									
39	Summary	East West		North South																	
40	Protected Option	88.2		48.9																	
41	Permitted Option	NA		NA																	
42	Split Option	93.7		56.7																	
43	Minimum	88.2		48.9																	
44	Combined	137.1																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	48.5	40.5	34.5	8.0																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	13.1	27.5	33.1	60.6																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	27.6	25.1	35.3	21.4																
51	Combined	89.2	93.1	102.9	90.0																
52	Intersection Capacity Utilization	97.9%																			
53	Level Of Service	E																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

22 2

Intersection Location: Old Seward & 36th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	1	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	31	1200	148	249	1430	29	283	223	484	238	570	65
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	34.2	1333.0	164.1	276.8	1588.9	31.9	314.5	248.1	538.3	264.1	633.3	72.0
14	Volume Combined	34.2	1497.0	0.0	276.8	1620.7	0.0	314.5	248.1	538.3	264.1	705.3	0.0
15	Volume Separate Left	34.2	1497.0		276.8	1620.7		314.5	248.1		264.1	705.3	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.984	0.850	0.950	0.997	0.850	0.950	1.000	0.850	0.950	0.985	0.850
18	Saturated Flow Combined	1805.0	3558.1	0.0	1805.0	3606.9	0.0	1805.0	1900.0	1615.0	1805.0	3562.2	0.0
19	Saturated Flow Separate	1805.0	3558.1		1805.0	3606.9		1805.0	1900.0		1805.0	3562.2	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	2.7	58.9	0.0	21.5	62.9	0.0	24.4	18.3	46.7	20.5	27.7	0.0
25	Adjusted Reference Time	8.0	62.9	8.0	25.5	66.9	8.0	28.4	22.3	50.7	24.5	31.7	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3558.1			3606.9			1900.0			3562.2	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3558.1			3606.9			1900.0			3562.2	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		58.9			62.9			18.3			27.7	
36	Ref Time By Movement	2.7	58.9		21.5	62.9		24.4	18.3		20.5	27.7	
37	Reference Time		58.9			62.9			24.4			27.7	
38	Adjusted Reference Time	62.9	62.9		66.9	66.9		28.4	28.4		31.7	31.7	
	Summary	East West		North South									
39	Protected Option	88.4		60.1									
40	Permitted Option	NA		NA									
41	Split Option	129.8		60.1									
42	Minimum	88.4		60.1									
43	Combined	148.5											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	8.0	8.0	50.7	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	22.3	31.7	66.9	62.9								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	25.5	8.0	24.5	28.4								
49	Combined	55.7	47.7	142.1	99.3								
50	Intersection Capacity Utilization	106.1%											
51	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

23 2

Intersection Location: Abbott & Abbott Loop Rd













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	1	1	1	0	0	1	1	1	1	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	258	736	15	33	896	0	0	480	44	70	30	268								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	120																			
13	Adjusted Volume	287.1	818.3	16.6	37.2	995.2	0.0	0.0	532.9	48.4	78.1	33.5	298.3								
14	Volume Combined	287.1	818.3	16.6	37.2	995.2	0.0	0.0	532.9	48.4	78.1	331.8	0.0								
15	Volume Separate Left	287.1	818.3		37.2	995.2		0.0	532.9		78.1	331.8									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.865	0.850								
18	Saturated Flow Combined	1805.0	1900.0	1615.0	1805.0	1900.0	0.0	0.0	1900.0	1615.0	1805.0	1643.7	0.0								
19	Saturated Flow Separate	1805.0	1900.0		1805.0	1900.0		1805.0	1900.0		1805.0	1643.7									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			FALSE			FALSE									
24	Reference Time	22.3	60.3	1.4	2.9	73.3	0.0	NA	NA	4.2	NA	NA	0.0								
25	Adjusted Reference Time	26.3	64.3	8.0	8.0	77.3	0.0	NA	NA	8.2	NA	NA	8.0								
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE									
27	Adjusted Saturation A		1900.0			1900.0			1900.0			1643.7									
28	Reference Time A		NA			NA			NA			NA									
29	Adjusted Saturation B		1900.0			1900.0			0.0			1643.7									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			NA			NA									
33	Adjusted Reference Time		NA			NA			NA			NA									
34	Split Timing																				
35	Ref Time Combined		60.3			73.3			39.3			28.3									
36	Ref Time By Movement	22.3	60.3		2.9	73.3		0.0	39.3		6.1	28.3									
37	Reference Time		60.3			73.3			39.3			28.3									
38	Adjusted Reference Time	64.3	64.3		77.3	77.3		43.3	43.3		32.3	32.3									
39	Summary	East West		North South																	
40	Protected Option	103.6		NA																	
41	Permitted Option	NA		NA																	
42	Split Option	141.6		75.5																	
43	Minimum	103.6		75.5																	
44	Combined	179.1																			
45	Right Turns	EBR	WBR	NBR	SBR																
46	Adjusted Reference Time	8.0	0.0	8.2	8.0																
47	Cross Through Direction	NBT	SBT	WBT	EBT																
48	Cross Through Adj Ref Time	43.3	32.3	77.3	64.3																
49	Oncoming Left Direction	WBL	EBL	SBL	NBL																
50	Oncoming Left Adj Ref Time	8.0	26.3	32.3	43.3																
51	Combined	59.3	58.5	117.8	115.6																
52	Intersection Capacity Utilization	127.9%																			
53	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

26 2

Intersection Location: Muldoon &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	0	1	0	0	0	1	2	0	0	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	320	0	145	0	0	0	204	1726	0	0	1250	361
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	355.7	0.0	161.3	0.0	0.0	0.0	226.9	1917.6	0.0	0.0	1389.2	400.9
14	Volume Combined	355.7	0.0	161.3	0.0	0.0	0.0	226.9	1917.6	0.0	0.0	1790.0	0.0
15	Volume Separate Left	355.7	0.0		0.0	0.0		226.9	1917.6		0.0	1790.0	
16	Lane Utilization Factor	0.971	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.966	0.850
18	Saturated Flow Combined	3505.3	0.0	1615.0	0.0	0.0	0.0	1805.0	3617.6	0.0	0.0	3496.1	0.0
19	Saturated Flow Separate	3505.3	0.0		0.0	0.0		1805.0	3617.6		0.0	3496.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	14.2	0.0	14.0	0.0	0.0	0.0	17.6	74.2	0.0	0.0	71.7	0.0
25	Adjusted Reference Time	18.2	0.0	18.0	0.0	0.0	0.0	21.6	78.2	0.0	0.0	75.7	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		0.0			0.0			3617.6			3496.1	
28	Reference Time A		NA			0.0			NA			NA	
29	Adjusted Saturation B		0.0			0.0			3617.6			3496.1	
30	Reference Time B		0.0			0.0			NA			NA	
31	Reference Time Lefts	22.2			0.0			NA			NA		
32	Reference Time		22.2			0.0			NA			NA	
33	Adjusted Reference Time		26.2			8.0			NA			NA	
34	Split Timing												
35	Ref Time Combined		0.0			0.0			74.2			71.7	
36	Ref Time By Movement	14.2	0.0		0.0	0.0		17.6	74.2		0.0	71.7	
37	Reference Time		14.2			0.0			74.2			71.7	
38	Adjusted Reference Time	18.2	18.2		0.0	0.0		78.2	78.2		75.7	75.7	
	Summary	East West	North South										
39	Protected Option	18.2	97.3										
40	Permitted Option	26.2	NA										
41	Split Option	18.2	153.9										
42	Minimum	18.2	97.3										
43	Combined	115.5											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	18.0	0.0	0.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	78.2	75.7	0.0	0.0								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	0.0	18.2	0.0	21.6								
49	Combined	96.2	93.9	0.0	29.6								
50	Intersection Capacity Utilization	82.5%											
51	Level Of Service	D											

Revision 00.4

# Intersection Capacity Utilization Worksheet

27 2

Intersection Location: Muldoon &amp; Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	0	1	0	0	0	1	2	0	0	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	473	0	383	0	0	0	329	2378	0	0	1612	350
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	525.4	0.0	425.5	0.0	0.0	0.0	365.0	2642.3	0.0	0.0	1791.4	388.6
14	Volume Combined	525.4	0.0	425.5	0.0	0.0	0.0	365.0	2642.3	0.0	0.0	2179.9	0.0
15	Volume Separate Left	525.4	0.0		0.0	0.0		365.0	2642.3		0.0	2179.9	
16	Lane Utilization Factor	0.971	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.973	0.850
18	Saturated Flow Combined	3505.3	0.0	1615.0	0.0	0.0	0.0	1805.0	3617.6	0.0	0.0	3520.9	0.0
19	Saturated Flow Separate	3505.3	0.0		0.0	0.0		1805.0	3617.6		0.0	3520.9	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	21.0	0.0	36.9	0.0	0.0	0.0	28.3	102.3	0.0	0.0	86.7	0.0
25	Adjusted Reference Time	25.0	0.0	40.9	0.0	0.0	0.0	32.3	106.3	0.0	0.0	90.7	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		0.0			0.0			3617.6			3520.9	
28	Reference Time A		NA			0.0			NA			NA	
29	Adjusted Saturation B		0.0			0.0			3617.6			3520.9	
30	Reference Time B		0.0			0.0			NA			NA	
31	Reference Time Lefts	29.0			0.0			NA			NA		
32	Reference Time		29.0			0.0			NA			NA	
33	Adjusted Reference Time		33.0			8.0			NA			NA	
34	Split Timing												
35	Ref Time Combined		0.0			0.0			102.3			86.7	
36	Ref Time By Movement	21.0	0.0		0.0	0.0		28.3	102.3		0.0	86.7	
37	Reference Time		21.0			0.0			102.3			86.7	
38	Adjusted Reference Time	25.0	25.0		0.0	0.0		106.3	106.3		90.7	90.7	
	Summary	East West	North South										
39	Protected Option	25.0	123.0										
40	Permitted Option	33.0	NA										
41	Split Option	25.0	196.9										
42	Minimum	25.0	123.0										
43	Combined	148.0											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	40.9	0.0	0.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	106.3	90.7	0.0	0.0								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	0.0	25.0	0.0	32.3								
49	Combined	147.1	115.7	0.0	40.3								
50	Intersection Capacity Utilization	105.7%											
51	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

28 2

Intersection Location: Muldoon &amp; 36th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	107	26	57	10	2	13	36	1711	142	171	820	87								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	118.4	28.9	63.5	11.2	2.2	14.7	39.8	1900.8	157.2	189.6	911.6	96.4								
14	Volume Combined	118.4	92.4	0.0	11.2	17.0	0.0	39.8	2058.0	0.0	189.6	1007.9	0.0								
15	Volume Separate Left	118.4	92.4		11.2	17.0		39.8	2058.0		189.6	1007.9									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	0.897	0.850	0.950	0.870	0.850	0.950	0.989	0.850	0.950	0.986	0.850								
18	Saturated Flow Combined	1805.0	1704.1	0.0	1805.0	1652.6	0.0	1805.0	3576.1	0.0	1805.0	3565.7	0.0								
19	Saturated Flow Separate	1805.0	1704.1		1805.0	1652.6		1805.0	3576.1		1805.0	3565.7									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	9.2	7.6	0.0	0.9	1.4	0.0	3.1	80.6	0.0	14.7	39.6	0.0								
25	Adjusted Reference Time	13.2	11.6	8.0	8.0	8.0	8.0	8.0	84.6	8.0	18.7	43.6	8.0								
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE									
27	Adjusted Saturation A		1704.1			1652.6			3576.1			3565.7									
28	Reference Time A		NA			1.4			NA			NA									
29	Adjusted Saturation B		1704.1			1652.6			3576.1			3565.7									
30	Reference Time B		7.6			1.4			NA			NA									
31	Reference Time Lefts	17.2			8.9			NA			NA										
32	Reference Time		17.2			1.4			NA			NA									
33	Adjusted Reference Time		21.2			8.0			NA			NA									
34	Split Timing																				
35	Ref Time Combined		7.6			1.4			80.6			39.6									
36	Ref Time By Movement	9.2	7.6		0.9	1.4		3.1	80.6		14.7	39.6									
37	Reference Time		9.2			1.4			80.6			39.6									
38	Adjusted Reference Time	13.2	13.2		8.0	8.0		84.6	84.6		43.6	43.6									
	Summary	East West		North South																	
39	Protected Option	21.2		103.3																	
40	Permitted Option	21.2		NA																	
41	Split Option	21.2		128.1																	
42	Minimum	21.2		103.3																	
43	Combined	124.5																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	8.0	8.0	8.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	84.6	43.6	8.0	11.6																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	8.0	13.2	18.7	8.0																
49	Combined	100.6	64.8	34.7	27.6																
50	Intersection Capacity Utilization	88.9%																			
51	Level Of Service	D																			

Revision 00.4



# Intersection Capacity Utilization Worksheet

29 2

Intersection Location: Muldoon &amp; 20th













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	249	0	136	99	0	54	10	975	47	19	1806	160								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	276.2	0.0	150.7	110.5	0.0	60.3	11.1	1083.8	51.7	20.8	2006.4	177.9								
14	Volume Combined	276.2	150.7	0.0	110.5	60.3	0.0	11.1	1135.6	0.0	20.8	2184.3	0.0								
15	Volume Separate Left	276.2	150.7		110.5	60.3		11.1	1135.6		20.8	2184.3									
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000								
17	Turning Factor Adjust	0.950	0.850	0.850	0.950	0.850	0.850	0.950	0.993	0.850	0.950	0.988	0.850								
18	Saturated Flow Combined	1805.0	1615.0	0.0	1805.0	1615.0	0.0	1805.0	3592.9	0.0	1805.0	3573.4	0.0								
19	Saturated Flow Separate	1805.0	1615.0		1805.0	1615.0		1805.0	3592.9		1805.0	3573.4									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	21.4	13.1	0.0	8.6	5.2	0.0	0.9	44.2	0.0	1.6	85.6	0.0								
25	Adjusted Reference Time	25.4	0.0	8.0	12.6	0.0	8.0	8.0	48.2	8.0	8.0	89.6	8.0								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		1615.0			1615.0			3592.9			3573.4									
28	Reference Time A		NA			NA			44.2			85.6									
29	Adjusted Saturation B		1615.0			1615.0			3592.9			3573.4									
30	Reference Time B		NA			NA			NA			NA									
31	Reference Time Lefts	NA			NA			NA			NA										
32	Reference Time		NA			NA			44.2			85.6									
33	Adjusted Reference Time		NA			NA			48.2			89.6									
34	Split Timing																				
35	Ref Time Combined		13.1			5.2			44.2			85.6									
36	Ref Time By Movement	21.4	13.1		8.6	5.2		0.9	44.2		1.6	85.6									
37	Reference Time		21.4			8.6			44.2			85.6									
38	Adjusted Reference Time	25.4	25.4		12.6	12.6		48.2	48.2		89.6	89.6									
	Summary	East West		North South																	
39	Protected Option	25.4		97.6																	
40	Permitted Option	NA		89.6																	
41	Split Option	38.0		137.8																	
42	Minimum	25.4		89.6																	
43	Combined	115.0																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	8.0	8.0	8.0	8.0																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	48.2	89.6	0.0	0.0																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	12.6	25.4	8.0	8.0																
49	Combined	68.8	123.0	16.0	16.0																
50	Intersection Capacity Utilization	87.9%																			
51	Level Of Service	D																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

30 2

Intersection Location: Bragaw &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	129	2838	56	29	2271	97	59	21	36	1571	106	647
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	143.8	3153.1	62.6	31.7	2523.0	107.8	65.4	23.0	39.4	1745.5	117.3	718.7
14	Volume Combined	143.8	3215.7	0.0	31.7	2630.8	0.0	65.4	62.4	0.0	1745.5	836.1	0.0
15	Volume Separate Left	143.8	3215.7		31.7	2630.8		65.4	62.4		1745.5	836.1	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.997	0.850	0.950	0.994	0.850	0.950	0.905	0.850	0.950	0.871	0.850
18	Saturated Flow Combined	1805.0	3607.0	0.0	1805.0	3595.4	0.0	1805.0	3274.6	0.0	1805.0	3151.1	0.0
19	Saturated Flow Separate	1805.0	3607.0		1805.0	3595.4		1805.0	3274.6		1805.0	3151.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	11.2	124.8	0.0	2.5	102.4	0.0	5.1	2.7	0.0	135.4	37.1	0.0
25	Adjusted Reference Time	15.2	128.8	8.0	8.0	106.4	8.0	9.1	8.0	8.0	139.4	41.1	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3607.0			3595.4			3274.6			3151.1	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3607.0			3595.4			3274.6			3151.1	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		124.8			102.4			2.7			37.1	
36	Ref Time By Movement	11.2	124.8		2.5	102.4		5.1	2.7		135.4	37.1	
37	Reference Time		124.8			102.4			5.1			135.4	
38	Adjusted Reference Time	128.8	128.8		106.4	106.4		9.1	9.1		139.4	139.4	
39	Summary	East West		North South									
40	Protected Option	136.8		147.4									
41	Permitted Option	NA		NA									
42	Split Option	235.3		148.5									
43	Minimum	136.8		147.4									
44	Combined	284.2											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	8.0	41.1	106.4	128.8								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	8.0	15.2	139.4	9.1								
51	Combined	24.0	64.3	253.8	145.9								
52	Intersection Capacity Utilization	203.0%											
53	Level Of Service	H											

Revision 00.4

# Intersection Capacity Utilization Worksheet

31 2

Intersection Location: Bragaw & Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement																				
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
2	Lanes	2	2	0	0	2	1	0	0	0	2	0	2								
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes										
4	Volume	1542	2561	0	0	911	211	0	0	0	457	0	1254								
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9								
6	Pedestrians			0			0			0			0								
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes									
8	Pedestrian Timing Required		16			16			16			16									
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes								
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4								
12	Reference Cycle Length	160																			
13	Adjusted Volume	1712.9	2846.1	0.0	0.0	1012.6	234.3	0.0	0.0	0.0	508.1	0.0	1393.4								
14	Volume Combined	1712.9	2846.1	0.0	0.0	1012.6	234.3	0.0	0.0	0.0	508.1	0.0	1393.4								
15	Volume Separate Left	1712.9	2846.1		0.0	1012.6		0.0	0.0		508.1	0.0									
16	Lane Utilization Factor	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	0.971	1.000	0.885								
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850								
18	Saturated Flow Combined	3505.3	3617.6	0.0	0.0	3617.6	1615.0	0.0	0.0	0.0	3505.3	0.0	2858.6								
19	Saturated Flow Separate	3505.3	3617.6		0.0	3617.6		0.0	0.0		3505.3	0.0									
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4								
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%									
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE									
24	Reference Time	68.4	110.1	0.0	0.0	39.2	20.3	0.0	0.0	0.0	20.3	0.0	68.2								
25	Adjusted Reference Time	72.4	114.1	0.0	0.0	43.2	24.3	0.0	0.0	0.0	24.3	0.0	72.2								
26	Permitted Option Allowed		FALSE			FALSE			TRUE			TRUE									
27	Adjusted Saturation A		3617.6			3617.6			0.0			0.0									
28	Reference Time A		NA			NA			0.0			NA									
29	Adjusted Saturation B		3617.6			3617.6			0.0			0.0									
30	Reference Time B		NA			NA			0.0			0.0									
31	Reference Time Lefts	NA			NA			0.0			28.3										
32	Reference Time		NA			NA			0.0			28.3									
33	Adjusted Reference Time		NA			NA			8.0			32.3									
34	Split Timing																				
35	Ref Time Combined		110.1			39.2			0.0			0.0									
36	Ref Time By Movement	68.4	110.1		0.0	39.2		0.0	0.0		20.3	0.0									
37	Reference Time		110.1			39.2			0.0			20.3									
38	Adjusted Reference Time	114.1	114.1		43.2	43.2		0.0	0.0		24.3	24.3									
	Summary	East West		North South																	
39	Protected Option	115.6		24.3																	
40	Permitted Option	NA		32.3																	
41	Split Option	157.3		24.3																	
42	Minimum	115.6		24.3																	
43	Combined	139.9																			
	Right Turns	EBR	WBR	NBR	SBR																
44	Adjusted Reference Time	0.0	24.3	0.0	72.2																
45	Cross Through Direction	NBT	SBT	WBT	EBT																
46	Cross Through Adj Ref Time	0.0	0.0	43.2	114.1																
47	Oncoming Left Direction	WBL	EBL	SBL	NBL																
48	Oncoming Left Adj Ref Time	0.0	72.4	24.3	0.0																
49	Combined	0.0	96.7	67.5	186.4																
50	Intersection Capacity Utilization	133.1%																			
51	Level Of Service	H																			

Revision 00.4

# Intersection Capacity Utilization Worksheet

32 2

Intersection Location: Bragaw &amp; Glenn Highway













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	2	2	1	1	2	1	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	21	1155	60	309	1276	72	151	553	552	274	464	26
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input checked="" type="checkbox"/> Yes			<input checked="" type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	23.4	1283.4	66.3	342.8	1417.7	80.1	167.4	614.7	613.1	304.3	516.0	28.6
14	Volume Combined	23.4	1283.4	66.3	342.8	1417.7	80.1	167.4	614.7	613.1	304.3	544.6	0.0
15	Volume Separate Left	23.4	1283.4		342.8	1417.7		167.4	614.7		304.3	544.6	
16	Lane Utilization Factor	1.000	0.952	1.000	0.971	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.992	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	3505.3	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3589.1	0.0
19	Saturated Flow Separate	1805.0	3617.6		3505.3	3617.6		1805.0	3617.6		1805.0	3589.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	1.8	49.7	5.7	13.7	54.9	6.9	13.0	23.8	53.1	23.6	21.2	0.0
25	Adjusted Reference Time	8.0	53.7	9.7	17.7	58.9	10.9	17.0	27.8	57.1	27.6	25.2	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3589.1	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3589.1	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		49.7			54.9			23.8			21.2	
36	Ref Time By Movement	1.8	49.7		13.7	54.9		13.0	23.8		23.6	21.2	
37	Reference Time		49.7			54.9			23.8			23.6	
38	Adjusted Reference Time	53.7	53.7		58.9	58.9		27.8	27.8		27.6	27.6	
	Summary	East West		North South									
39	Protected Option	71.4		55.4									
40	Permitted Option	NA		NA									
41	Split Option	112.5		55.4									
42	Minimum	71.4		55.4									
43	Combined	126.8											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	9.7	10.9	57.1	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	27.8	25.2	58.9	53.7								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	17.7	8.0	27.6	17.0								
49	Combined	9.7	10.9	143.6	78.6								
50	Intersection Capacity Utilization	102.6%											
51	Level Of Service	F											

Revision 00.4

# Intersection Capacity Utilization Worksheet

33 2

Intersection Location: Bragaw &amp; Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	1	1	2	1	1	2	1	1	2	1
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	406	1573	493	276	998	242	229	829	342	225	553	120
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	451.1	1747.7	547.3	307.1	1108.9	268.9	254.6	921.0	380.3	249.6	614.1	133.4
14	Volume Combined	451.1	1747.7	547.3	307.1	1108.9	268.9	254.6	921.0	380.3	249.6	614.1	133.4
15	Volume Separate Left	451.1	1747.7		307.1	1108.9		254.6	921.0		249.6	614.1	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850
18	Saturated Flow Combined	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0	1805.0	3617.6	1615.0
19	Saturated Flow Separate	1805.0	3617.6		1805.0	3617.6		1805.0	3617.6		1805.0	3617.6	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	35.0	67.6	47.4	23.8	42.9	23.3	19.7	35.6	33.0	19.4	23.8	11.6
25	Adjusted Reference Time	39.0	71.6	51.4	27.8	46.9	27.3	23.7	39.6	37.0	23.4	27.8	15.6
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			3617.6			3617.6	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			3617.6			3617.6	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		67.6			42.9			35.6			23.8	
36	Ref Time By Movement	35.0	67.6		23.8	42.9		19.7	35.6		19.4	23.8	
37	Reference Time		67.6			42.9			35.6			23.8	
38	Adjusted Reference Time	71.6	71.6		46.9	46.9		39.6	39.6		27.8	27.8	
	Summary	East West		North South									
39	Protected Option	99.5		63.0									
40	Permitted Option	NA		NA									
41	Split Option	118.6		67.4									
42	Minimum	99.5		63.0									
43	Combined	162.5											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	51.4	27.3	37.0	15.6								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	39.6	27.8	46.9	71.6								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	27.8	39.0	23.4	23.7								
49	Combined	118.9	94.1	107.2	111.0								
50	Intersection Capacity Utilization	116.0%											
51	Level Of Service	G											

Revision 00.4

# Intersection Capacity Utilization Worksheet

34 2

Intersection Location: Bragaw & Penland













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	1	0	1	1	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	4525	1424	3665	31	51	5	329	1083	25	22	725	290
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	140											
13	Adjusted Volume	5028.0	1582.0	4072.5	34.1	56.8	5.7	365.7	1202.9	27.3	24.2	805.0	321.7
14	Volume Combined	5028.0	5654.5	0.0	34.1	62.5	0.0	365.7	1230.2	0.0	24.2	1126.7	0.0
15	Volume Separate Left	5028.0	5654.5		34.1	62.5		365.7	1230.2		24.2	1126.7	
16	Lane Utilization Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.892	0.850	0.950	0.986	0.850	0.950	0.997	0.850	0.950	0.957	0.850
18	Saturated Flow Combined	1805.0	1694.7	0.0	1805.0	1874.1	0.0	1805.0	3605.6	0.0	1805.0	3462.7	0.0
19	Saturated Flow Separate	1805.0	1694.7		1805.0	1874.1		1805.0	3605.6		1805.0	3462.7	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	390.0	467.1	0.0	2.6	4.7	0.0	28.4	47.8	0.0	1.9	45.6	0.0
25	Adjusted Reference Time	394.0	471.1	8.0	8.0	8.7	8.0	32.4	51.8	8.0	8.0	49.6	8.0
26	Permitted Option Allowed		TRUE			TRUE			FALSE			FALSE	
27	Adjusted Saturation A		1694.7			1874.1			3605.6			3462.7	
28	Reference Time A		NA			4.7			NA			NA	
29	Adjusted Saturation B		1694.7			1874.1			3605.6			3462.7	
30	Reference Time B		467.1			NA			NA			NA	
31	Reference Time Lefts	398.0			NA			NA			NA		
32	Reference Time		467.1			4.7			NA			NA	
33	Adjusted Reference Time		471.1			8.7			NA			NA	
34	Split Timing												
35	Ref Time Combined		467.1			4.7			47.8			45.6	
36	Ref Time By Movement	390.0	467.1		2.6	4.7		28.4	47.8		1.9	45.6	
37	Reference Time		467.1			4.7			47.8			45.6	
38	Adjusted Reference Time	471.1	471.1		8.7	8.7		51.8	51.8		49.6	49.6	
	Summary	East West		North South									
39	Protected Option	479.1		81.9									
40	Permitted Option	471.1		NA									
41	Split Option	479.8		101.3									
42	Minimum	471.1		81.9									
43	Combined	553.0											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	8.0	8.0	8.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	51.8	49.6	8.7	471.1								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	8.0	394.0	8.0	32.4								
49	Combined	67.8	451.5	24.7	511.5								
50	Intersection Capacity Utilization	395.0%											
51	Level Of Service	H											

Revision 00.4

# Intersection Capacity Utilization Worksheet

35 2

Intersection Location: Boniface &amp; Tudor













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	2	2	0	1	2	0	1	1	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	702	2558	0	4	1400	0	115	58	0	0	140	612
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	780.0	2841.9	0.0	3.9	1556.0	0.0	128.0	64.0	0.0	0.0	155.7	679.5
14	Volume Combined	780.0	2841.9	0.0	3.9	1556.0	0.0	128.0	64.0	0.0	0.0	835.3	0.0
15	Volume Separate Left	780.0	2841.9		3.9	1556.0		128.0	64.0		0.0	835.3	
16	Lane Utilization Factor	0.971	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	1.000	0.850	0.950	1.000	0.850	0.950	1.000	0.850	0.950	0.878	0.850
18	Saturated Flow Combined	3505.3	3617.6	0.0	1805.0	3617.6	0.0	1805.0	1900.0	0.0	1805.0	3176.1	0.0
19	Saturated Flow Separate	3505.3	3617.6		1805.0	3617.6		1805.0	1900.0		1805.0	3176.1	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	31.2	110.0	0.0	0.3	60.2	0.0	9.9	4.7	0.0	0.0	36.8	0.0
25	Adjusted Reference Time	35.2	114.0	0.0	8.0	64.2	0.0	13.9	8.7	0.0	0.0	40.8	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3617.6			3617.6			1900.0			3176.1	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3617.6			3617.6			1900.0			3176.1	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		110.0			60.2			4.7			36.8	
36	Ref Time By Movement	31.2	110.0		0.3	60.2		9.9	4.7		0.0	36.8	
37	Reference Time		110.0			60.2			9.9			36.8	
38	Adjusted Reference Time	114.0	114.0		64.2	64.2		13.9	13.9		40.8	40.8	
	Summary	East West	North South										
39	Protected Option	122.0	54.7										
40	Permitted Option	NA	NA										
41	Split Option	178.2	54.7										
42	Minimum	122.0	54.7										
43	Combined	176.7											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	0.0	0.0	0.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	8.7	40.8	64.2	114.0								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	8.0	35.2	0.0	13.9								
49	Combined	16.7	76.0	64.2	135.9								
50	Intersection Capacity Utilization	126.2%											
51	Level Of Service	H											

Revision 00.4

# Intersection Capacity Utilization Worksheet

36 2

Intersection Location: Boniface & Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	301	969	149	112	523	147	273	555	331	332	647	217
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	334.4	1077.1	165.1	124.8	581.3	163.3	303.3	616.6	368.3	369.1	718.6	241.0
14	Volume Combined	334.4	1242.2	0.0	124.8	744.6	0.0	303.3	985.0	0.0	369.1	959.6	0.0
15	Volume Separate Left	334.4	1242.2		124.8	744.6		303.3	985.0		369.1	959.6	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.980	0.850	0.950	0.967	0.850	0.950	0.944	0.850	0.950	0.962	0.850
18	Saturated Flow Combined	1805.0	3545.5	0.0	1805.0	3498.6	0.0	1805.0	3414.7	0.0	1805.0	3481.3	0.0
19	Saturated Flow Separate	1805.0	3545.5		1805.0	3498.6		1805.0	3414.7		1805.0	3481.3	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	25.9	49.1	0.0	9.7	29.8	0.0	23.5	40.4	0.0	28.6	38.6	0.0
25	Adjusted Reference Time	29.9	53.1	8.0	13.7	33.8	8.0	27.5	44.4	8.0	32.6	42.6	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3545.5			3498.6			3414.7			3481.3	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3545.5			3498.6			3414.7			3481.3	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		49.1			29.8			40.4			38.6	
36	Ref Time By Movement	25.9	49.1		9.7	29.8		23.5	40.4		28.6	38.6	
37	Reference Time		49.1			29.8			40.4			38.6	
38	Adjusted Reference Time	53.1	53.1		33.8	33.8		44.4	44.4		42.6	42.6	
	Summary	East West		North South									
39	Protected Option	66.7		77.0									
40	Permitted Option	NA		NA									
41	Split Option	86.8		87.0									
42	Minimum	66.7		77.0									
43	Combined	143.7											
	Right Turns	EBR	WBR	NBR	SBR								
44	Adjusted Reference Time	8.0	8.0	8.0	8.0								
45	Cross Through Direction	NBT	SBT	WBT	EBT								
46	Cross Through Adj Ref Time	44.4	42.6	33.8	53.1								
47	Oncoming Left Direction	WBL	EBL	SBL	NBL								
48	Oncoming Left Adj Ref Time	13.7	29.9	32.6	27.5								
49	Combined	66.1	80.5	74.4	88.6								
50	Intersection Capacity Utilization	102.7%											
51	Level Of Service	F											

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# Intersection Capacity Utilization Worksheet

39 2

Intersection Location: Boniface &amp; Debarr













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	2	0	1	2	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	317	1432	299	199	853	224	221	812	231	302	902	154
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	160											
13	Adjusted Volume	352.3	1591.0	331.8	220.9	947.4	249.0	246.0	902.6	256.6	335.5	1002.0	170.8
14	Volume Combined	352.3	1922.8	0.0	220.9	1196.4	0.0	246.0	1159.1	0.0	335.5	1172.8	0.0
15	Volume Separate Left	352.3	1922.8		220.9	1196.4		246.0	1159.1		335.5	1172.8	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000	1.000	0.952	1.000
17	Turning Factor Adjust	0.950	0.974	0.850	0.950	0.969	0.850	0.950	0.967	0.850	0.950	0.978	0.850
18	Saturated Flow Combined	1805.0	3524.0	0.0	1805.0	3504.7	0.0	1805.0	3497.5	0.0	1805.0	3538.6	0.0
19	Saturated Flow Separate	1805.0	3524.0		1805.0	3504.7		1805.0	3497.5		1805.0	3538.6	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	27.3	76.4	0.0	17.1	47.8	0.0	19.1	46.4	0.0	26.0	46.4	0.0
25	Adjusted Reference Time	31.3	80.4	8.0	21.1	51.8	8.0	23.1	50.4	8.0	30.0	50.4	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3524.0			3504.7			3497.5			3538.6	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3524.0			3504.7			3497.5			3538.6	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		76.4			47.8			46.4			46.4	
36	Ref Time By Movement	27.3	76.4		17.1	47.8		19.1	46.4		26.0	46.4	
37	Reference Time		76.4			47.8			46.4			46.4	
38	Adjusted Reference Time	80.4	80.4		51.8	51.8		50.4	50.4		50.4	50.4	
39	Summary	East West		North South									
40	Protected Option	101.5		80.4									
41	Permitted Option	NA		NA									
42	Split Option	132.2		100.8									
43	Minimum	101.5		80.4									
44	Combined	181.9											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	50.4	50.4	51.8	80.4								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	21.1	31.3	30.0	23.1								
51	Combined	79.5	89.7	89.8	111.5								
52	Intersection Capacity Utilization	130.0%											
53	Level Of Service	H											

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# Intersection Capacity Utilization Worksheet

41 2

Intersection Location: Patterson &amp; Northern Lights













City: Anchorage, AK

Analyzed by: MKW

Alternative: No-Build 2023 PM

Date and Time of Data:

Project: East Anchorage Traffic Study

1	Movement												
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2	Lanes	1	2	0	1	2	0	1	1	0	1	1	0
3	Shared LT Lane (y/n)	<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes		
4	Volume	118	875	295	75	370	20	107	44	78	159	165	354
5	Peak Hour Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6	Pedestrians			0			0			0			0
7	Ped Button (y/n)		<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes	
8	Pedestrian Timing Required		16			16			16			16	
9	Free Right (y/n)			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes			<input type="checkbox"/> Yes
10	Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
11	Lost Time	4	4	4	4	4	4	4	4	4	4	4	4
12	Reference Cycle Length	80											
13	Adjusted Volume	131.5	972.3	328.1	82.8	411.0	21.9	119.0	49.2	86.2	177.1	183.6	393.5
14	Volume Combined	131.5	1300.4	0.0	82.8	432.9	0.0	119.0	135.4	0.0	177.1	577.2	0.0
15	Volume Separate Left	131.5	1300.4		82.8	432.9		119.0	135.4		177.1	577.2	
16	Lane Utilization Factor	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
17	Turning Factor Adjust	0.950	0.962	0.850	0.950	0.992	0.850	0.950	0.905	0.850	0.950	0.898	0.850
18	Saturated Flow Combined	1805.0	3480.7	0.0	1805.0	3590.1	0.0	1805.0	1718.6	0.0	1805.0	1705.7	0.0
19	Saturated Flow Separate	1805.0	3480.7		1805.0	3590.1		1805.0	1718.6		1805.0	1705.7	
20	Minimum Green	4	4	4	4	4	4	4	4	4	4	4	4
21	Pedestrian Interference Time		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
22	Pedestrian Frequency		0.0%			0.0%			0.0%			0.0%	
23	Protected Option Allowed		TRUE			TRUE			TRUE			TRUE	
24	Reference Time	10.2	52.3	0.0	6.4	16.9	0.0	9.2	11.0	0.0	13.7	47.4	0.0
25	Adjusted Reference Time	14.2	56.3	8.0	10.4	20.9	8.0	13.2	15.0	8.0	17.7	51.4	8.0
26	Permitted Option Allowed		FALSE			FALSE			FALSE			FALSE	
27	Adjusted Saturation A		3480.7			3590.1			1718.6			1705.7	
28	Reference Time A		NA			NA			NA			NA	
29	Adjusted Saturation B		3480.7			3590.1			1718.6			1705.7	
30	Reference Time B		NA			NA			NA			NA	
31	Reference Time Lefts	NA			NA			NA			NA		
32	Reference Time		NA			NA			NA			NA	
33	Adjusted Reference Time		NA			NA			NA			NA	
34	Split Timing												
35	Ref Time Combined		52.3			16.9			11.0			47.4	
36	Ref Time By Movement	10.2	52.3		6.4	16.9		9.2	11.0		13.7	47.4	
37	Reference Time		52.3			16.9			11.0			47.4	
38	Adjusted Reference Time	56.3	56.3		20.9	20.9		15.0	15.0		51.4	51.4	
39	Summary	East West		North South									
40	Protected Option	66.7		64.6									
41	Permitted Option	NA		NA									
42	Split Option	77.2		66.4									
43	Minimum	66.7		64.6									
44	Combined	131.3											
45	Right Turns	EBR	WBR	NBR	SBR								
46	Adjusted Reference Time	8.0	8.0	8.0	8.0								
47	Cross Through Direction	NBT	SBT	WBT	EBT								
48	Cross Through Adj Ref Time	15.0	51.4	20.9	56.3								
49	Oncoming Left Direction	WBL	EBL	SBL	NBL								
50	Oncoming Left Adj Ref Time	10.4	14.2	17.7	13.2								
51	Combined	33.5	73.6	46.6	77.5								
52	Intersection Capacity Utilization	93.8%											
53	Level Of Service	E											

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